

3

Chinese Gunpowder Technology and Đại Việt, ca. 1390–1497

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Military technology tends to be the first to be borrowed, since the penalties for not doing so are immediate and fatal.

—Anthony Reid, *Europe and Southeast Asia*.

Any big change in weapons and military organization affects politics and society by helping some people attain ends more easily than before, while putting new, perhaps insuperable, obstacles in the way of others. The advent of guns was such a change.

—William H. McNeill, *The Age of Gunpowder Empires*,
1450–1800.

There is a large lacunae in Asian military history on the transfer of Chinese gunpowder technology to Southeast Asia before the sack of Melaka by the Portuguese in 1511. Elsewhere I have shown how the gunpowder technology of early Ming China (ca. 1368–1450) disseminated to all of northern mainland Southeast Asia (defined as including southern Yunnan, Northeast India, and northern parts of modern mainland Southeast Asia) and discussed its implications.¹ This

research focuses on two issues in Sino-Vietnamese relations and Vietnamese history with respect to the spread of Chinese firearms.

The first issue between China and Việt Nam is who borrowed gunpowder technology from whom. This involves the well-known but highly puzzling passage in the *Ming shi* (History of the Ming dynasty): “When it came to [the time] of Ming Chengzu [Yongle, 1403–24] Jiaozhi (Đại Việt) was pacified, the techniques of magic gun and cannon (*shenji qiangpao fa*) were obtained; a firearms battalion (*shenji ying*) was especially established to drill [firearms].”² This has led to the popular belief that the Chinese, through their invasion of Đại Việt in 1406–7, acquired firearms technology from the Vietnamese.³ Though this view has been challenged in many ways, it is far from discredited.⁴ In particular no efforts have been made to demonstrate convincingly that Việt Nam acquired gunpowder technology from China rather than the other way around. More than one Chinese source express a similar view in the passage in the *Ming shi* quoted here, indicating that the subject merits closer attention. This study examines the issues in detail by making full use of Chinese and Vietnamese sources. On the one hand, it stresses the Chinese origins of gunpowder technology; on the other hand, it also acknowledges Vietnamese innovations in some aspects of gunpowder technology.

The second issue involves the driving forces behind the external expansion of Đại Việt during the fifteenth century, including both the well-known episode of the fall of the Cham capital, Vijaya, in 1471 and the little-known “long march” of Đại Việt troops to the Irrawaddy River between 1479 and 1484. The main question here is why, after having confronted Champa for more than one thousand (or five hundred) years, Đại Việt was able to defeat Champa decisively at this time.⁵ To date available views can be summarized as follows.

First, the agricultural and demographic theory: This view holds that the population increase of Đại Việt both drove and provided an edge for the southward march (*nam tiến*) of the Vietnamese.⁶ Earlier views tend to stress population growth as a result of the agricultural development in the Red River delta but without giving much thought to the latter.⁷ But in a more recent article explaining the ethnic succession of the Pyu, the Mon, the Khmer, and the Cham by the Burmese, the Thai, and the Vietnamese in mainland Southeast Asia,

Richard A. O'Connor attributes it to the replacement of "lowland agriculture" ("garden farmers") by "wet rice specialists" who could produce more rice to foster "the trade, population growth, and resource concentration that promote state power and societal expansion."⁸ Li Tana's research on the demographic trend in northern and central Việt Nam lends more credence to this theory.⁹

Second, the Confucian transformation interpretation: This construal argues that the Ming invasion of Đại Việt in 1406–7 finally led to the adoption of the Ming Chinese model by the Vietnamese, especially under the rule of Lê Thánh-tông (r. 1460–97). As a result, the Vietnamese state was transformed. In particular Đại Việt embraced the Chinese "civilized versus barbarian" ideology and applied it to its relations with Champa. In the words of John K. Whitmore, "Now the moral question became central and marked the difference between the 'civilized' and the 'barbarian.' No longer did cultural relativity reign, nor were the attacks mere looting raids after which another local prince would be put on the throne. The goal instead became to bring 'civilization' to the uncivilized." In other words, only when the Vietnamese occupied Champa permanently could they civilize its people.¹⁰

Third, the institutional interpretation: While the previous view accounts for the institutional strength of Đại Việt, this view explains the institutional weakness of Champa. According to Kenneth R. Hall, Champa, rather than being a centralized state, was "a weakly institutionalized state system that depended upon personal alliance networks to integrate a fragmented population." With a very limited agricultural base and maritime trade, Champa was operated primarily on a "plunder-based political economy," which fluctuated according to the availability of resources and especially the success or failure of external plundering expeditions. Thus, "[t]he inherent institutional weakness in the Cham state ultimately sealed its fate."¹¹

Each of these views has merit, but the questions have not yet been comprehensively answered. This research approaches the issue from a technological perspective by taking military technology into account. It argues that Chinese-derived gunpowder technology played an important role in Đại Việt southward and westward expansion in the late fifteenth century.

Transfers of Gunpowder Technology from Ming China to Đại Việt, ca. 1390–1427

1. THE EARLIEST FIREARMS IN ĐẠI VIỆT AND THE DEFEAT OF CHAMPA

Although the transfer of military technology from China to modern Việt Nam can be traced to the time before the Common Era, a significant transfer took place during the early Ming period. In 1390 the powerful Cham king Chế Bông Nga was killed by a volley of *huochong* in a naval battle.¹² This weapon has long been widely understood as a cannon, but it was more plausibly a handgun (figure 1).¹³ It was, as pointed out by Momoki Shiro, a new weapon.¹⁴ The firing of these handguns and especially the death of Chế Bông Nga caused psychological chaos among the Cham soldiers, who were consequently routed. Đại Việt was thus saved from a “total collapse” or “one of the major crises in the history of Dai Viet.”¹⁵

A brief review of Đại Việt’s situation in the second half of the fourteenth century can help us better understand the significance of Đại Việt’s victory in 1390. For three decades (1361–90) Chế Bông Nga launched about ten invasions, large and small, of Đại Việt (in 1361, 1362, 1364, 1365, 1368, 1371, 1377, 1380, 1382, and 1383), and the capital of Đại Việt fell three times (in 1371, 1377, and 1383). In 1389 a series of domestic revolts preceded another full-scale Cham invasion. Hồ Quý Ly led Đại Việt troops to confront the enemy but was defeated on the Luong River. Hồ Quý Ly fled to the capital, followed by his



Figure 3.1. The handguns would have been like the ones held in the History Museum in Hà Nội (probably from the fifteenth to sixteenth centuries). Photo by author.

generals, one of whom commented: "The enemy is stronger than we are, and resistance is impossible." Then the most dramatic episode took place (in the words of Georges Maspéro):

Continuing his advance, he (Che Bong Nga) reached the Hoang River. Terror once again reigned in the capital. The order was given to Tran Khac-chon to march and meet him. The fear inspired by the Cham king and his armies was so great that when this general presented himself before the old emperor, he could not contain his tears despite his courage, and his sovereign also wept. Nevertheless, he advanced to the Hoang River. Finding the Cham there in too great force to enter into combat, he pulled back to the Hai-trieu River. The situation appeared hopeless; everything seemed to indicate a prompt occupation of the country by Cham troops. The emperor's younger brother, Nguyễn Dieu, then crossed over with all his men to the camp of Che Bong Nga, hoping no doubt that the latter, master of Annam, would entrust him with its government. At the same time, a monk, Pham Su-on, occupied the capital at the head of a group of partisans. The two emperors had to flee and call back General Huynh The Phuong.¹⁶

At this crucial moment when "Vietnamese civilization was badly shaken," as Whitmore put it, a low-ranking Cham officer defected and helped the Vietnamese identify Chế Bông Nga's warship among several hundred. A concentration of firepower from the Vietnamese took the life of the Cham king, and the Cham troops retreated. When the Vietnamese king, Trần Thuận-tông, (r. 1388–98) was roused from his sleep and saw the head of Chế Bông Nga, he was startled and thought the enemy was already at his camp. Upon learning about the death of Chế Bông Nga, the jubilant Vietnamese king commented with great relief: "Bông Nga and I have been confronting for long but we did not get to see each other until today. Is not this like that Han Gaozu saw the head of Xiang Yu!¹⁷ [Now] the country is pacified."¹⁸

Maspéro maintained that it was the Cham officer's betrayal that "stopped the victorious march of the Cham and saved Annam from an invasion in which its independence would perhaps have been lost." However, without the newly acquired gunpowder technology, Đại Việt's victory in this naval battle and the subsequent fate of the Vietnamese state would have been extremely uncertain. Thus the year 1390, as many scholars have observed, signaled a shift in the balance of power between Đại Việt and Champa.¹⁹ From this time on, Đại Việt seemed to have gained the upper hand. Apparently, the effectiveness of Đại Việt's new military technology played a part in this shift of the

balance of power in general and a determining role in the 1390 victory of the Đại Việt navy in particular.

Though the origin of the Vietnamese handgun is not specified, it is reasonable to speculate that it had been obtained from either Ming traders or military deserters prior to 1390. Wang Ji, the minister of war and commander-in-chief of the campaigns against the Maw Shans (Luchuan) in modern southwestern Yunnan, memorialized in 1444: "In the past Luchuan rebelled primarily because profit-seekers on the frontier, illegally carrying weapons and other goods, sneaked into Mubang (Hsenwi), Miandian (Ava), Cheli (Sipson Panna), Babai (Lan Na), and so on, and communicated with the aboriginal chieftains and exchanged goods. There were also those who taught them to make weapons, liked [their] women, and remained there."²⁰ Though not specifically mentioned here, Đại Việt should have been on the list.

It seems that the adoption of firearms in Đại Việt increased the need for gunmetal, because in 1396 the late Trần dynasty, under the control of Hồ Quý Ly, issued paper money and required people to exchange their copper cash, possibly with the purpose of collecting more copper for manufacturing firearms.²¹

2. THE EMPLOYMENT OF FIREARMS BY MING TROOPS IN ĐẠI VIỆT (1406–21)

The Ming invasion and occupation of Đại Việt between 1406 and 1427 greatly furthered the transfer of military technology from China to Đại Việt. As a military superpower determined to subdue Đại Việt, Ming China mobilized its best generals and troops for that purpose. The Yongle emperor was highly concerned with this campaign and paid much attention to every detail in the preparation. To withstand Đại Việt's firearms (*huoqi*), he ordered the Ministry of Works to manufacture large, thick, and durable shields.²² He ordered that the technology of making firearms, including the "magic handgun/cannon" (*shenji chong*), should not be leaked to the enemy. Particularly, the "firearm generals" (*shenji jiangjun*) were ordered to make sure that when their troops withdrew, firearms would "be counted each to its original number and not a single piece be allowed to go."²³ Among the 215,000 invading soldiers of the Ming army were some troops armed with firearms. They were headed by at least four firearm generals: Cheng Kuan, Zhu Gui, Luo Wen, and Zhang Sheng.²⁴ If we

accept the estimate that 10 percent of the early Ming army was equipped with firearms, then around 21,500 soldiers should have served under these generals.²⁵ They must have formed the backbone of the Firearms Battalion, a special and separate type of troops specializing in firearms that was established soon after the invasion of 1406–7 (discussed later). One Chinese source sheds light on the composition of firearms in one battalion (*yíng*) by the mid-sixteenth century. It consisted of forty batteries or units (*duì*) and was equipped with 3,600 “thunderbolt shells” (*pili pao*), 160 “wine-cup muzzle general cannon” (*zhankou jiangjun pao*), 200 large and 328 small “continuous bullet cannon” (*lianzhu pao*), 624 handguns (*shouba chong*), 300 small grenades (*xiao feipao*), about 6.97 tons of gunpowder, and 1,051,600 or more bullets of approximately 0.8 ounce each. The total weight of the weaponry was 29.4 tons.²⁶

On November 19, 1406, Ming troops led by Zhang Fu entered Đại Việt from Guangxi, while those under Mu Sheng marched from Yunnan.²⁷ Soon afterward, Đại Việt troops—twenty thousand at the Ailuu Pass and thirty thousand at the Ke-lang Pass—tried to block Zhang Fu’s armies with *huochong* and other weapons, but they were routed easily.²⁸ Earlier the Ming court had worried about the lack of a navy for the campaign.²⁹ But in either December 1406 or January 1407, when the Ming troops arrived in the Tam-doi prefecture on the north bank of the modern Red River, they started to “build ships and set cannon (*chong*) on them.”³⁰ This was the beginning of the Ming navy in Đại Việt. On January 19, 1407, Vietnamese soldiers crossing the river fired *chong* on the Chinese but were routed by the latter.³¹

The capture of Do-bang by the Ming armies demonstrates the crucial role played by Ming firearms. Do-bang was the most important strategic point in Đại Việt’s defense against the Ming. The Ming commanders told their soldiers, “This city is what the enemy relies on.”³² Đại Việt must have counted on Do-bang’s defense to prevent the Ming troops from penetrating farther south. Therefore, Đại Việt deployed heavy troops and its best weapons to defend it. The city wall was high, and significant quantities of *chong*, arrows, wooden, and stone obstacles were deployed. To defend the city, two deep moats were constructed with bamboo sticks inside. Outside the moats pits for trapping horses were dug, with pointed bamboo and wooden sticks on and beneath them. In brief, Đại Việt’s defense was well prepared. Before the attack, troops under Zhang Fu prepared weapons

and other equipment.³³ The Ming armies' general offensive took place on January 19–20, 1407. The Ming troops attacked the city from all directions, employing scaling ladders (*yunti*; see figure 2), *xianren dong*, and gunpowder signal lights (*yemingguang huoyao*).³⁴ According to the *Đại Việt sử ký toàn thư* (Complete book of the historical record of Đại Việt), "the dead bodies [of the Ming soldiers] piled up as high as the city wall, but [the Ming troops] still kept climbing and fighting; nobody dared to stop."³⁵ When the Ming troops climbed onto the city wall, the alarmed and bewildered Vietnamese defenders could only shoot a few arrows and *chong*. After having successfully entered the city, the Ming soldiers were confronted by Đại Việt elephants and numerous infantry. The Ming troops covered their horses with lion masks to scare the elephants.³⁶ In particular, soldiers led by the fire-arm generals Luo Wen and Cheng Kuan played a crucial role in the victory of the Ming. The magic handguns or cannons (*shenji chong*) were set up along the sides of the horses, and both *chong* and rocket arrows (*huojian*) were shot to rout the elephants.³⁷ This was significant because the Southeast Asian elephant corps had been a formidable force against the Chinese over the centuries; but with the advent and especially heavy employment of firearms, "the elephants stood no chance."³⁸ While the Vietnamese troops were in chaos, the Ming advanced their horses and foot soldiers and shot a large number of arrows, handguns, and cannons (*pao*). As a result countless Vietnamese soldiers died.³⁹ The *Đại Việt sử ký toàn thư* informs us that the elephants turned back, and the Ming soldiers proceeded into the city. The city fell, and the defense line along the river collapsed.⁴⁰ The *Ming shi* states that Do-bang "fell, [the Vietnamese] disheartened" (literally "their gallbladder cracked").⁴¹ With the fall of Do-bang, the Đại Việt troops could no longer prevent the Ming armies' march forward to the east and the south. On January 20 the eastern capital (Đông-đô, Thăng-long, or modern Hà Nội) fell. Six days later, on January 26, the western capital (Tây-đô, in Thanh-hoá province) fell as well.⁴²

In all the subsequent battles Ming firearms also proved to be very effective. In early February 1407, Ming troops killed at least 37,390 Đại Việt soldiers.⁴³ On February 21, on the Lục-giang, the Ming mobilized their navy and foot soldiers. They employed "magic handgun/cannon" and "bowl-sized muzzle cannon" (*wankou chong*; see figure 3) to attack over five hundred Vietnamese ships led by Hồ Nguyên Trừng, son of

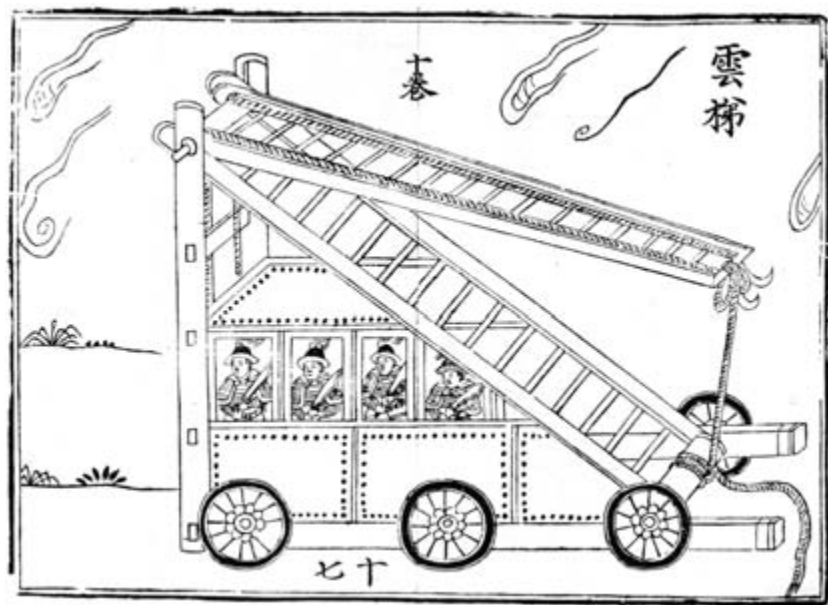


Figure 3.2. Scaling ladder (*yunti*). Reprinted from Cheng Dong and Zhong Shaoyi, *Zhongguo gudai bingqi tuji*, 219.

Hồ Quý Ly, and killed more than ten thousand Vietnamese soldiers.⁴⁴ One Chinese source describes the scene as one in which the firing of “firearms [was] like flying stars and lightning.”⁴⁵ Retreating to Mùòng-hải, Hồ Nguyên Trừng manufactured firearms and warships that could withstand the enemy.⁴⁶ On March 18, 1407, in the Phung-hoa prefecture, Ming troops used “great general cannon” (*da jiangjun chong*; see figure 4) to smash many enemy ships.⁴⁷ On May 4, 1407, a major battle took place at the Hâm-tư Pass. The Vietnamese employed a sizable number of soldiers (seventy thousand) and numerous warships and riverboats, which extended to more than ten *li*.⁴⁸ Vietnamese soldiers loaded *chong* to fire at the Ming soldiers. Though the sources are silent regarding this issue, the Ming side no doubt employed heavy firearms, especially considering that the firearms generals Zhang Sheng, Ding Neng, and Zhu Gui were involved.⁴⁹ The Ming troops won a significant victory, killing over ten thousand Vietnamese soldiers and capturing more than one thousand warships.⁵⁰ On May 30, the Ming soldiers killed another ten thousand Vietnamese

碗口銃
碗口銃用弩為架上加活盤以銃嵌入兩頭打過一銃又打一銃放時以銃口內衝大石彈照準賊船底船平水面打去以碎其船最為便利

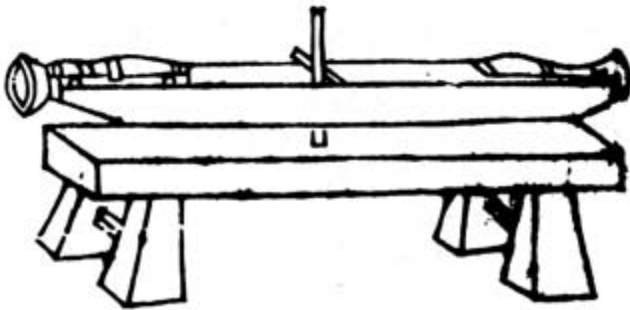


Figure 3.3. "Bowl-sized muzzle cannon" (*wankou chong*). The Chinese text says: "The 'double bowl-mouthed gun' consists of (two) guns set on a movable support pivoted (so that it can rotate horizontally) on a (wooden) bench. Thus there were two heads (muzzles) pointing away from one another. Immediately after the firing [of] the first gun, the second is (rotated into position) and fired, each one being muzzle-loaded with a large stone projectile. If the gun is aimed at the hull of an enemy ship below the water-line, the cannon-balls shoot along the surface and smash its side into splinters (so that it sinks). It is a very handy weapon." Translation by Joseph Needham. Reprinted by permission from Joseph Needham, *Science and Civilisation in China*, vol. 5, *Chemistry and Chemical Technology*, pt. 7, "Military Technology: The Gunpowder Epic," 321, 324.

大將軍銃

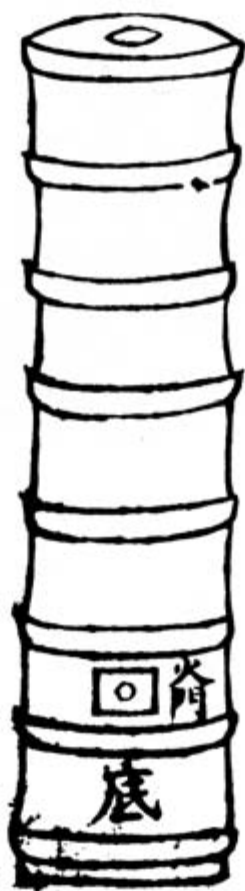


Figure 3.4. The “great general cannon” (*da jiangjun chong*). It originally weighed 150 *jin* (1 *jin* = 0.5 kg) with a length 3 *chi* (1 *chi* = 0.3 meter), but in the late fifteenth century the weight was increased to 250 *jin* and the length doubled to 6 *chi*, with a shooting range of 800 paces. Reprinted by permission from Joseph Needham, *Science and Civilisation in China*, vol. 5, *Chemistry and Chemical Technology*, pt. 7, “Military Technology: The Gunpowder Epic,” 336–337, 338.

soldiers in Thanh-hoá.⁵¹ Among the Ming troops chasing Hồ Quý Ly and his followers to the south were those led by the firearm generals Luo Wen, Cheng Kuan, Zhang Sheng, and Ding Neng.⁵² On June 16–17, 1407, Ming troops finally ended their invasion of Đại Việt by capturing Hồ Quý Ly and his sons.⁵³ The quick Ming victory was noted by Huang Fu, who was in charge of military supplies during the war and later served as administration and surveillance commissioner of the annexed Jiaozhi province: “The speedy success was never known in the past.”⁵⁴

From February 1409 to February 1421, in suppressing a series of Vietnamese rebellions, especially those led by Trần Quý Khoách and Trần Gian Đinh (or Gian Đinh Đế), Ming troops again employed firearms. The Ming troops were commanded mainly by Zhang Fu, who was sent to Đại Việt on February 11, 1409, for the second time, and on February 10, 1411, for the third.⁵⁵ On July 3, Zhang Fu had more warships built because he realized that the Vietnamese took advantage of rivers and the sea to resist the Chinese.⁵⁶ On September 29, 1409, at the Ham-tu Pass, Zhang Fu’s troops fought with twenty thousand Đại Việt soldiers, who had more than six hundred ships; “the [firepower] of the firearms [was] intense while the arrows were shot like raindrops.” As a result over three thousand Vietnamese soldiers were killed, and “countless” drowned, and the Ming captured more than four hundred ships.⁵⁷ On September 6, 1412, a fierce naval battle took place at the Than-dau estuary. Although the Vietnamese had more than four hundred ships and were in high spirits, they could not withstand the Ming’s firearms and fled.⁵⁸ On February 7, 1421, Ming troops chased a Vietnamese rebel to the Ngoc-ma prefecture and were confronted by the Tais. The latter employed elephants to charge at their enemies, but the Ming soldiers “shot the elephant riders, and then used firearms to attack them; the elephants turned back, the rebels were routed.”⁵⁹

In some battles the use of firearms is not mentioned, but there is no reason for the Ming troops not to have employed them. For instance, on February 12, 1410, in the Dong-ho prefecture, Ming troops under Zhang Fu fought twenty thousand Vietnamese, killed over forty-five hundred, and captured more than two thousand.⁶⁰ On August 6, 1411, in a battle that took place in Cuu-chan prefecture, the Vietnamese had more than 300 boats, but the Ming army and navy killed over four

hundred soldiers and captured over 120 boats. We know that Zhang Sheng, one of the firearms generals, was among the leading Ming generals in this battle.⁶¹

Most Ming firearms were manufactured in China in 1409, 1414, 1415, 1421, and 1426. Without question, these manufacturing dates are connected to Yongle's five campaigns against the Mongols in the north, but the campaigns in Đại Việt may well have been another factor.⁶² The establishment of the Firearms Battalion, discussed later in this study, may have been the result of the effectiveness in Đại Việt of Ming firearms, which were employed there for the first time on a large scale in Ming foreign military campaigns.

Although the Vietnamese were familiar with gunpowder technology and had employed firearms since 1390, this weaponry must have been inferior in both quality (with one to two exceptions, examined later in the discussion) and especially quantity vis-à-vis Chinese weapons. Because China's attempts to conquer Đại Việt ever since the latter's independence in the tenth century failed both before and after the Ming, the Yongle emperor himself could proudly point out that the Ming achievements exceeded that of the Song and the Yuan, and Vietnamese chroniclers, when referring to the Ming conquest of Đại Việt, commented that "the disaster caused by the Ming people was unprecedented."⁶³ We know that the Qing suffered also in its invasion of Đại Việt in the late eighteenth century. Thus the Ming indeed stands out for its success in conquering Đại Việt and occupying it for twenty years. Đại Việt under Hồ Quý Ly prepared early (from 1401 on) and well for the Ming invasion, mobilizing an unprecedented number of soldiers and civilians.⁶⁴ Nonetheless, the Ho regime collapsed rather quickly. The reason, besides factors such as resentment against Hồ Quý Ly's reforms, low morale, strategic mistakes, and the bad military leadership of the Hồ, lies in Ming China's military superiority, including firearms.⁶⁵

3. THE EMPLOYMENT OF FIREARMS BY ĐẠI VIỆT TROOPS (CA. 1426–1427)

The Ming troops gradually lost this technological superiority as their Vietnamese counterpart under Lê Lợi captured more and more Ming weapons and other military supplies in several major battles in 1418, 1420, 1421, 1424, and 1425. Thus Lê Lợi's troops were able to arm themselves quickly.⁶⁶ Though Vietnamese records do not specify the

types of weapons, they doubtless included a large number of firearms, something attested by the battle of Ninh-kiều (or Chuc-dong-Tat-dong) on December 4, 1426.⁶⁷ Earlier the Ming troops in Jiaozhi city (Đông-quan, modern Hà Nội) employed firearms (*huochong* and rockets) to repel Đại Việt armies. The latter retreated, and the Chinese decided to pursue them.⁶⁸ About 100,000 Ming soldiers led by Wang Tong and other generals were ambushed and defeated. It is important for our purpose to mention that among these Ming troops were 510 soldiers led by the regional military commander of the Firearms Battalion, Xie Rong; they had been sent on May 8, 1426, by the Ming emperor to follow Wang Tong to Đại Việt.⁶⁹ Three thousand crack Đại Việt soldiers armed with the best weapons played a decisive role in this victory. According to Vietnamese accounts, over 50,000 Ming soldiers were killed (Chinese records state 20,000 to 30,000), “countless” drowned, and over 10,000 were captured, while “countless” horses, supplies, weapons, and so on fell into Vietnamese hands.⁷⁰ As a result these Ming troops lost almost all their weapons. After retreating to Dong-quan, they thus had to manufacture firearms and ammunitions using bronze obtained by destroying the famous giant bell Quy-dien and urns at the Pho-minh temple.⁷¹

This great victory was decisive for the Vietnamese for two reasons. First, they captured the largest number of firearms and other military supplies ever from the Ming. As a result, the Vietnamese troops’ weaponry must have been enhanced to an unprecedented degree.

Second, this battle was a turning point in Đại Việt’s anti-Ming movement. Encouraged by this victory, the troops led by Lê Lợi marched north from Thanh-hoá (or Nghệ-an according to the *Ming shilu*).⁷² Soon afterward, on December 8, 1426, Lê Lợi and his troops besieged Đông-quận and “obtained . . . many enemy ships, weapons and equipment; tens of thousands of army provisions all fell to us.”⁷³

In addition Ming captives and defectors also provided the Vietnamese with military technology. Around February 1427, some Ming captives provided the Vietnamese with techniques for attacking city walls, models for protective shelters (*zhanpeng*, or *xupeng*), primitive tanks (*fenwen che*; see figure 5), “flying horse carts” (*feimache*), and Muslim (counterweighted) catapults (*Xiangyang pao* or *Huihui pao*; see figure 6).⁷⁴ Lê Lợi ordered the manufacture of weapons and equipment based on these models and distributed them to different places.⁷⁵ Just before the final attack of Xuong-giang, city-siege carts



Figure 3.5. Primitive tank (*fēnwēn chē*). Reprinted from Mao Yuanyi, *Wu bei zhi*, 5:4540.

(probably *Liugong chē*; see the discussion later in this study) were also constructed on the order of Lê Lợi.⁷⁶ Among the Ming captives, one by the name Cai Fu, probably the highest-ranking (commander-in-chief, *dudu*, rank 1a), had played an important role in the fall of Do-bang in 1407; around January 1427, however, he and other Ming officers surrendered to the Vietnamese and taught them how to make city-siege devices to take Xuong-giang and Đông-quận.⁷⁷

All these captured or newly manufactured weapons helped Đại Việt troops defeat and drive out the Ming invaders, something reflected in the siege of the city of Xuong-giang, the most strategic point for the Ming armies in early 1427 insofar as they depended on Đông-quận while awaiting reinforcements from China.⁷⁸ Vietnamese troops were determined to take it before the arrival of sizable Chinese reinforcements from Yunnan. Đại Việt troops had besieged the city

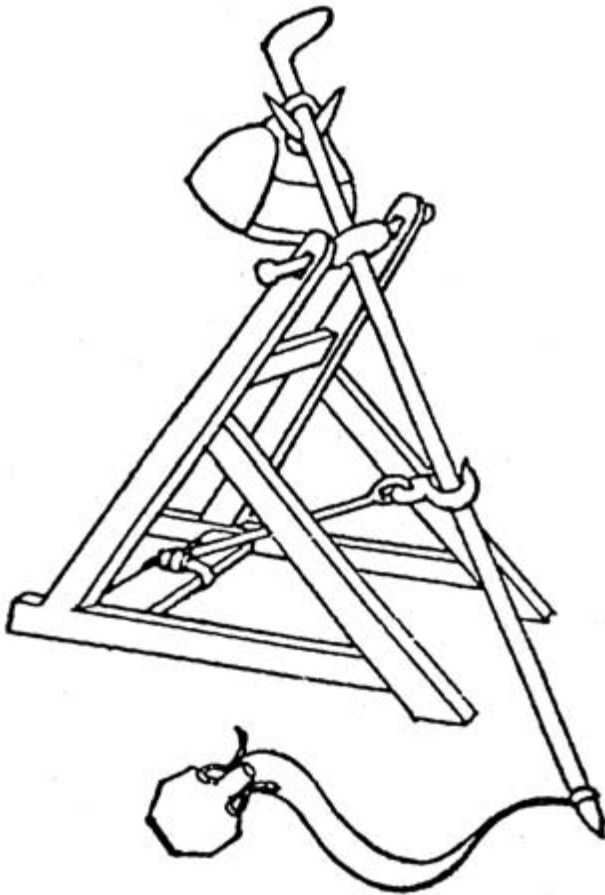


Figure 3.6. Muslim (counterweighted) catapult (*Xiangyang pao*). Reprinted from Wang Zhaochun, *Zhongguo huoqi shi*, 66.

for over six (or nine according to the *Ming shilu*) months but could not take it. About two thousand Ming defenders employed *chong* and presumably catapults hurling huge stones (*jiangjun shi* or *jiangjun shizi*) to defend the city. Eventually the eighty thousand Vietnamese succeeded in taking the city using the technology they had learned from the Chinese. They built earth hills around the city from which they then shot their weapons into the city. They dug tunnels into the city and employed turtle-colored “Duke Lü’s overlook and assault

carts" (*Lüggong che*), fire lances (*feiqlang*; literally "flying lances"), rocket arrows (*huojian*), cannon (*huopao*), scaling ladders, and so on.⁷⁹ The *Đại Việt sử ký toàn thư* describes the siege thus: "[The Vietnamese employed] hooks, halberds, rocket arrows, cannon, and attacked from the four directions; thus the city fell."⁸⁰ This occurred on April 28, 1427. Just as the taking of Do-bang by Ming troops in early 1407 signaled the collapse of Đại Việt's defense, the fall of Xương-giang destroyed the Ming's. According to the "Lâm sơn thực lục": "The enemy relied on Xuong-giang's defense; upon learning that Xuong-giang had been taken [they] lost their hope."⁸¹ As modern Vietnamese historians have pointed out, the taking of Xương-giang paved the way for the final Vietnamese victory and was also significant from a military point of view, confirming that Vietnamese troops could besiege and take strong fortifications as well as fight guerrilla wars.⁸² Without heavy firearms, the Vietnamese victories would have been extremely difficult if not impossible. One of the differences between the siege of Do-bang and that of Xương-giang was that after twenty years, the Đại Việt troops had more advanced firearms, especially handguns and cannons, and other equipment, most of which had been captured from the Ming armies.

The Vietnamese captured more weapons and military supplies when they took Xuong-giang, and from September to November 1427 they obtained even more when they defeated the reinforcing units from Guangxi and Yunnan, which totaled over 150,000 soldiers. One Vietnamese source provides detailed information on the battle at the Chi-lang Pass. Several hundred brave Vietnamese soldiers and two hundred crack troops armed with "sufficient cannon, arrows, [and] gunpowder" were hiding at the two sides of the pass. Liu Sheng and his soldiers were surprised by the shot of a signal gun, while "from the two sides arrows were shot like raindrops, the sound of cannon was like thunder . . . [and] countless [enemies] died."⁸³ According to Vietnamese accounts, more than ninety thousand Chinese troops perished in the fighting, and "countless" weapons were captured.⁸⁴ The *Đại Việt sử ký toàn thư* specifically points out that the number of weapons and military supplies the Vietnamese troops captured from the Ming reinforcing armies from Yunnan doubled those obtained from the battle of Xuong-giang.⁸⁵ The more than one hundred thousand troops from Guangxi, led initially by Liu Sheng, must have carried a considerable number of firearms. Liu Sheng had been in

charge of the Firearms Battalion and had fought against the Mongols many times on the northern frontier of the Ming between 1410 and 1423, and heavy firearms played a crucial role in those northern campaigns.⁸⁶ Liu Sheng's soldiers demonstrably included ten thousand crack troops who had followed Zheng He on his expeditions and were sent to Đại Việt on March 29, 1427.⁸⁷ They were undoubtedly armed with the best weapons. In January 1428, about 86,640 Ming military personnel and civilians withdrew from Đại Việt, all of whom were all certainly disarmed.⁸⁸

It is thus not surprising that Lê Lợi himself pointed out "many enemies joined our side and fought against [the Ming army], [thus] all the bows, arrows, lances, and shields they had became our weapons."⁸⁹ Ngô Sĩ Liên, one of the compilers of the *Đại Việt sử ký toàn thư*, commented, "Most weapons, equipment, and grains were obtained from the enemy."⁹⁰

The large number of Ming people and weapons remaining in Đại Việt after the withdrawal was understandably a major concern of the Ming court, and the court repeatedly requested that Đại Việt return the Ming officials, soldiers, and weapons. Some Chinese sources claim that "countless" Ming subjects still remained in Đại Việt, while a Vietnamese source states that the number was closer to several tens of thousands.⁹¹ Despite its claim of having done so, Đại Việt did not return a single piece of weaponry, and the Ming court eventually ceased its demands.⁹²

Vietnamese Contributions to Chinese Gunpowder Technology

It should be noted that Đại Việt not only imported military technology from but also exported better techniques to Ming China.⁹³ After the conquest of Đại Việt in 1407, the Ming acquired from the Vietnamese a weapon called *shen qiang*, *shen qiang jian*, or *shenji huo-qiang*, meaning literally "magic fire-lance arrow."⁹⁴ This fire lance was better than its Chinese counterpart because of one unique feature: it had a heavy wooden wad (*mu ma zi* in Chinese) made of ironwood behind the arrow to increase pressure within the barrel. The arrow could, therefore, be shot as far as three hundred paces (see figure 7). Indeed, Chinese sources inform us that the fire lances made in Đại Việt were the best.⁹⁵ Many Chinese soldiers were probably killed by

神鎗

此卽平安南所得者也。箭下有木送子并置鉛彈等物。其妙處在用鐵力木重而有力。一發可以三百步。

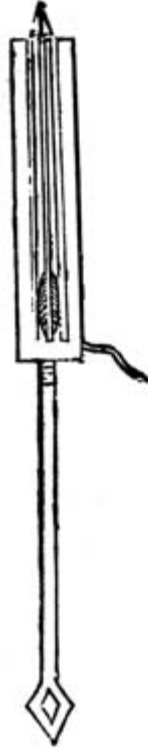


Figure 3.7. Fire lance (*shen qiang*, *shen qiang jian*, or *shenji huoqiang*). The Chinese text says: "This was acquired during the conquest of Annam. There is a wooden wad (*mu song zi*) behind the arrow; some lead bullets and such are also placed with it. Its ingenious part is that [the wooden wad] is made of ironwood (*tieli mu*), [hence it is] heavy and forceful. It can shoot three hundred paces" (my translation). Reprinted from Mao Yuanyi, *Wu bei zhi*, 6:5362–63.

this Vietnamese weapon during the Chinese invasion. Since ironwood was readily available in Đại Việt as well as Guangdong, Guangxi, and Yunnan, it is possible that the Vietnamese employed this indigenous resource to invent the wooden wad to increase the shooting range of the fire lance. This technique was adopted in China for handguns by 1415; a Ming handgun made in this year had a wooden wad between gunpowder and “bullets” (iron grits), while the handguns prior to this time did not yet have this salient feature (see figures 8a–b).

Moreover, from at least 1410 onward the igniting device of the handguns was improved by replacing the small hole where a fuse was inserted with a rectangular, lidded slot on the rear of the barrel. This feature made it easier to ignite the gunpowder, because the slot and the lid prevented the gunpowder and the fuse from getting wet when it rained. Evidence suggests that the Vietnamese may have invented this device. First, no handgun with this improved igniting device existed until after the Ming invasion of Đại Việt in 1410; second, the tropical climate in Đại Việt, with great humidity and the long rainy season, may have encouraged this invention.⁹⁶ Interestingly, among the six Vietnamese handguns at the Việt Nam History Museum, three of them have such an ignition device (see figure 9a–b; see also figure 1).⁹⁷

On the order of the Yongle emperor, Vietnamese captives skilled at making firearms such as handguns or cannons (*huochong*), short lances (*duanqian*), fire lances (*shenjian*), and gunpowder were sent to the Chinese capital, Nanjing, with many other kinds of craftsmen. Altogether about seventeen thousand Vietnamese captives were taken to China, among them Hồ Nguyên Trừng (“Li Cheng” in Chinese). The Vietnamese chronicle specifically mentions that in 1407 Nguyễn Trung made firearms and warships to combat the invading Chinese.⁹⁸ The fact that Nguyễn Trung, as the Left Grand Councilor (*zuo xiangguo* in Chinese), was skilled in making firearms shows the importance Đại Việt attached to gunpowder technology and the intense competition between Đại Việt and its neighbors, primarily China and Champa.⁹⁹ This expertise changed Nguyễn Trung’s fate in China. While in Nanjing Nguyễn Trung’s father, Hồ Quý Ly, and brother Hồ Hán Thương, the two kings of the Hồ regime, were jailed after their capture by the Chinese, but Nguyễn Trung was pardoned and allowed to serve in the Ministry of Works.¹⁰⁰ He took charge of manufacturing firearms (*chong* and *jian*) and gunpowder at the



Figure 3.8a. Chinese handgun of 1372 without wooden wad. Reprinted from Cheng Dong and Zhong Shaoyi, *Zhongguo gudai bingqi tuji*, 231.

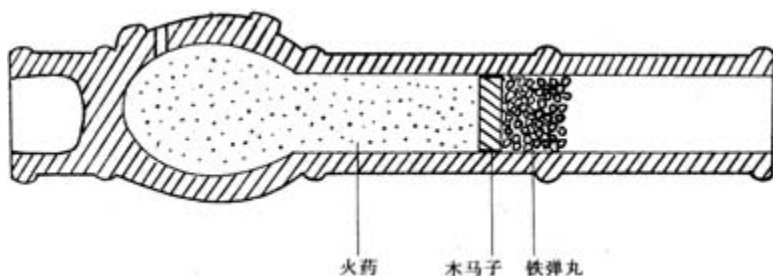


Figure 3.8b. Chinese handgun of 1415 (length 42.6 cm, muzzle bore diameter 4.4 cm, weight 8.9 kg) with wooden wad. The Chinese words mean (from left to right) “gunpowder,” “wooden wad,” and “iron bullets.” When unearthed they were still in the barrel of the gun. Reprinted from Cheng Dong and Zhong Shaoyi, *Zhongguo gudai bingqi tuji*, 231.

weapon-manufacturing bureau (*Bingzhang ju*) and was eventually promoted to Minister of Works. He probably played an important role in establishing the Firearms Battalion in Ming China. According to one unofficial Chinese account, after receiving the order to accompany the Yongle emperor to attack the Mongols on the north frontier, three Vietnamese, including Nguyễn Trung, set up the Firearms Battalion prior to 1412. At least one of them (other than Nguyễn Trung) participated in the campaign and died soon afterward on June 9, 1412.¹⁰¹ Some alley (*hutong*) names in Ming Beijing (lasting to the Qing and even today) such as “Annan Battalion (*Annan ying*),” “Jiaozhi,” “Greater Annan Battalion (*Da Annan ying*),” and “Lesser Annan Battalion (*Xiao Annan ying*)” were probably derived from the settlement of Vietnamese soldiers.¹⁰²

According to other Chinese records, when the Ming court held a memorial ceremony for the God of Firearms, it also offered a sacrifice to Hồ Nguyên Trùng.¹⁰³ Upon the death of Hồ Nguyên Trùng at the age seventy-three, his son replaced him and continued to manufacture firearms for the Ming until he retired at age seventy in 1470.¹⁰⁴



Figure 3.9a. One of the three Vietnamese handguns (see figure 3.1) with the ignition device or protector.



Figure 3.9b. Chinese handgun of 1415 with this device (length 44 cm, muzzle bore diameter 5.2 cm). Reprinted from Cheng Dong and Zhong Shaoyi, *Zhongguo gudai bingqi tuji*, 231.

Up to 1489, the descendants of these Vietnamese craftsmen were still in the service of the Ming.¹⁰⁵

The Vietnamese techniques discussed here were used widely and had implications for the Ming military. During the early Hongzhi reign (1488–1505), thirty thousand linden and ninety thousand sandalwood wads were manufactured. Another kind of hardwood was sent from Guangxi to the capital as tribute for the manufacture of fire lances (*shen qiang*). The wooden wad technique was still used even after the arrival of Portuguese firearms in China in the late sixteenth century, as was the new ignition device.¹⁰⁶ The establishment of the

Firearms Battalion, to which the Vietnamese contributed at least some personnel and techniques, proved effective and sometimes crucial in Ming China's fighting with the Mongols. In 1414, when Yongle and his armies were surrounded by the Mongols, firearms with presumably Vietnamese technical features helped Ming troops break the siege. The effectiveness of the firearms in this event even impressed the Koreans; they recorded it in their record of the Yi (Choson) dynasty.¹⁰⁷

The Vietnamese fire lance was also put to good use. One Chinese source states that when the Yongle emperor fought the Mongols, "[they had] just got the fire lance (*shen qiang*) from Annam; one barbarian (*lu*) marched straight forward, and two followed; [they were] all hit by the fire lance and died."¹⁰⁸ Teng Zhao, the vice minister of the Ministry of War during the reign of Chenghua (1465–87) commented: "[We] basically rely on the fire lance (*shen qiang*) to defeat enemies and win victories. From Yongle (1403–24) to Xuande (1426–35), [the fire lance] was properly drilled and was most feared by the barbarians (*luzei*, or the Mongols)."¹⁰⁹ In 1449, after the Ming suffered the Tumu debacle, more than 28,000 handguns (*shen chong*) and 440,000 fire lances (*shen jian*) were collected from the battle scene.¹¹⁰ The point that concerns us here is that these handguns and fire lances must have had Vietnamese techniques.

We now have a better understanding of the puzzling and often misunderstood passage in the *Ming shi* quoted at the beginning of this study. Despite the mistaken inference by later scholars, the passage means that China acquired only some new techniques, not gunpowder technology, from Đại Việt. This was first suggested by Arima Seiho and recently further supported by Li Bin's research.¹¹¹ Othersources also shed new light on the issue. The *Ming shi*, which was completed in 1739, seems to have derived its information from earlier works, including Shen Defu's. According to Shen, "Our dynasty employed firearms to combat the northern barbarians, [which] are number-one weapons from ancient times to the present. However, the ingenious (*qing miao*, meaning literally "light" and "wonderful") techniques of these firearms were not obtained until Emperor Wen (Yongle) pacified Jiaozhi. Hence, [our dynasty] hired its false Grand Councillor . . . to work in the Ministry of Works, [to be] solely in charge of manufacturing [Vietnamese-style firearms], and all the techniques were truly grasped."

This shows clearly that the Chinese obtained from the Vietnamese “the ingenious techniques of these firearms.”¹¹²

The Increased Use of Firearms during the Early Lê (1428–1497)

On September 18, 1428, soon after the withdrawal of the Ming, Đại Việt started to strengthen its navy. Each main general was to command, *inter alia*, ten big warships, two small sentry boats, one super-sized *huotong* (*hoả đông* in Vietnamese), ten large *huotong*, ten medium-sized *huotong*, and eighty small *huotong*.¹¹³ This demonstrates that from this time on the Đại Việt navy was equipped with more and heavier firearms. Also it seems that soldiers using *huotong* were organized into a unit headed by the Associate Administrator of Strong Crossbows and *Huotong*, and in 1449 the names of the two units of the *huotong* were changed to “magic thunder” and “magic lightning.”¹¹⁴ Between January 26 and October 4, 1429, unspecified weapons and warships were built.¹¹⁵ According to the *Thiên nam dư hạ tập* (Collection of Works Written during Leisure Time in the South), which was written in December 1483, the Ministry of Works of Đại Việt manufactured powerful handguns (*chong*) and cannon (*pao*).¹¹⁶ Though the numbers produced are not specified, firearms seem to have been used extensively. For example, soldiers in some *ve* (*wei* is a Chinese military unit) specialized in firearms; their titles included “firearms specialist,” “handgun shooting specialist,” and “cannon shooting specialists,” while in many *ve* across the country only one out of five or six *so* (*suo* is a Chinese military unit) employed handguns and crossbows. These data suggest that such firearms units comprised around 20 percent of the military.¹¹⁷ In 1467 Lê Thánh-tông (r. 1460–97) ordered the manufacture of new types of weapons.¹¹⁸ In 1469 an edict was issued regarding the drill of the different military units, including those employing *chong* and crossbows.¹¹⁹ In 1479 a firearm arsenal, where sharp weapons, guns, gunpowder, sulfur, and so on were stored, was burned down when Lê Thánh-tông was on his way to invade Ailao.¹²⁰ On January 11, 1493, a firearm arsenal was added to each arsenal.¹²¹

Soon after the withdrawal of the Ming from Đại Việt in 1428, the acquisition of gunpowder- and firearm-making materials accelerated in Đại

Việt. On September 18, 1428, the government urged acquisition of copper, iron, saltpeter, and so on.¹²² In 1467 the use of saltpeter for fireworks was prohibited.¹²³ All these governmental actions imply that a greater amount of saltpeter was needed for military use than in the past. At the Ministry of Works, special units were in charge of saltpeter manufacturing.¹²⁴ Not coincidentally, 1429 witnessed the beginning of the exportation of a large quantity of copper from Yunnan into Đại Việt for making fire-arms. Around the fifteenth century, there were altogether nineteen copper-producing sites in prefectures such as Chuxiong, Lin'an, Chengjiang, Yunnan, Luliang, Yongning, and Yongchang, and several located in eastern and southeastern Yunnan were close to the Yunnan–Đại Việt border.¹²⁵ According to a memorial in 1429, silver, copper, and so forth were illegally mined by both military personnel and civilians in Dongchuan and Huili in northeastern Yunnan. But because these places were close to foreign countries (probably Đại



Figure 3.10a. Vietnamese flamer-throwers (*huo pentong* in Chinese; *hoa phun dong* in Vietnamese) on one of the nine tripods (*cuu dinh*) in the Hue palace (cast in 1835). It is not clear what material was used for the tube. Photo by Phan Thanh Hai.

水噴筒

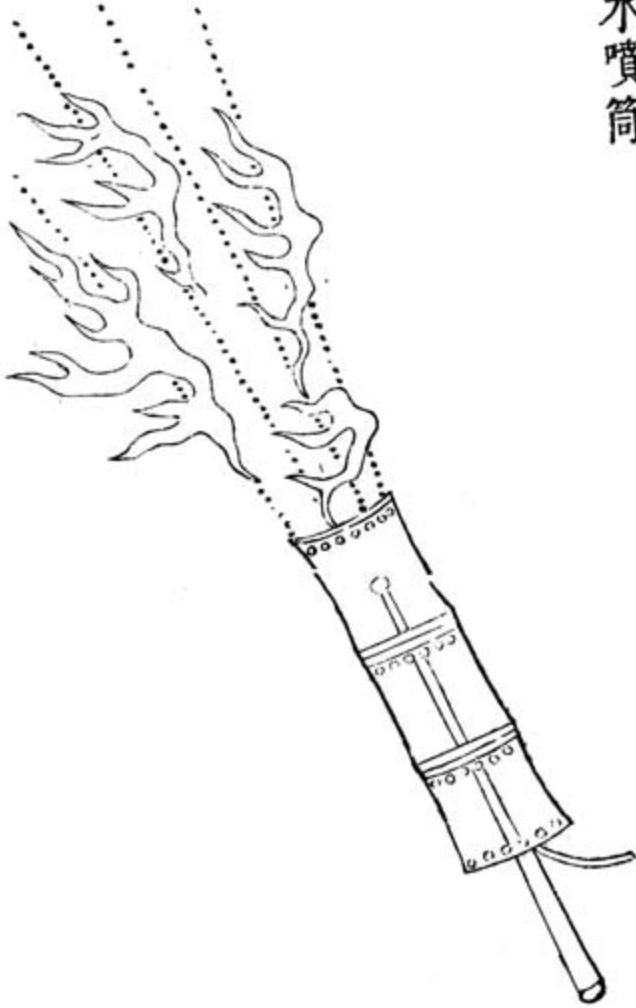


Figure 3.10b. Chinese flamethrower (*shenshui[huo] pentong*) with bamboo tube. Reprinted from Mao Yuanyi, *Wu bei zhi*, 6:5465, 5466.

Việt), the mining was ordered to stop lest soldiers and civilians create trouble.¹²⁶ However, the mining did not stop; instead the scale increased. Because the profit was enormous, a substantial number of people became involved in the mining and smuggling of copper, a considerable amount of which was smuggled into Đại Việt.¹²⁷

In 1477 Đại Việt purchased copper from Mengzi for manufacturing weapons.¹²⁸ A Chinese source clearly states that the Đại Việt people purchased copper and iron from Lianhuatan for making handguns.¹²⁹ Prior to 1481 merchants transported goods to Lianhuatan to trade with the Vietnamese.¹³⁰ In 1481 the Ministry of Revenue of Ming China reported that a copper mine in Lu'nan of Yunnan was mined illegally for Đại Việt to manufacture weapons, and it stipulated that those who illegally traded copper out of Yunnan be executed and their families exiled to the malarial regions.¹³¹ In 1484 the illegal trade of copper to Đại Việt occurred in another county.¹³² Not only did the border officials in Yunnan not prohibit these activities; they abetted them.¹³³ The military use of copper is also recorded in Vietnamese sources. In 1497 the Đại Việt government ordered that the number of copper-extracting households be increased to fulfill military needs.¹³⁴ The practice of importing copper from Yunnan for manufacturing cannon in Đại Việt continued into the seventeenth century, though the scale seems to have dwindled.¹³⁵

Gunpowder technology also spread from Đại Việt westward to the Phuan region and Chiang Mai. In most of the fifteenth century, Đại Việt waged military campaigns against Muong Phuan, eventually annexing the land and making it the Tran-ninh prefecture in 1479.¹³⁶ As a result the Phuan people were heavily influenced by the Vietnamese, particularly in military technology. By the eighteenth century the capital of Muong Phuan was fortified better than Do-bang in the fifteenth century. In particular the Phuan had in their possession, and probably manufactured themselves, "countless" saltpeter, sulfur, and firearms including handguns and rockets.¹³⁷ Vietnamese gunpowder technology traveled further westward. In 1443, when Chiang Mai was invading Nan, it was a Vietnamese by the name of Pan Songkram who helped operate the cannon. As a result, Nan eventually surrendered.¹³⁸

Based on this discussion, one can speculate that after 1390, especially as a result of the Ming invasion and occupation, the proportion of firearms in the military weaponry of Đại Việt increased. To some extent, we may say that a military revolution had taken place, and Đại Việt had become a "gunpowder state," if not a "gunpowder empire."

Southward and Westward Expansion of Đại Việt (c. 1430s–1480s)

During the reign of Lê Thánh-tông (r. 1460–97), Đại Việt reached its golden age, witnessing rapid, stunning, and unprecedented internal consolidation and external expansion. In the words of John K. Whitmore, it was “a Vietnam more peaceful, prosperous, and powerful than any before the nineteenth century, and perhaps after.”¹³⁹ Internally, following the Ming model the state of Đại Việt was transformed ideologically, bureaucratically, and militarily.¹⁴⁰ The latter point refers not only to Đại Việt’s establishment of a large and well-organized military force, but also to its extensive employment of firearms as demonstrated in the earlier discussion.¹⁴¹ These factors must have increased the authority and power of the Vietnamese state domestically and facilitated the external expansion of Đại Việt.¹⁴² This expansion is best reflected in Đại Việt’s sack of Champa to the south and march westward to the Irrawaddy River in the kingdom of Ava.

Beginning in the 1430s Đại Việt intensified its military activities on its western frontier, where different Thai peoples dwelled in the Sip Song Chu Tai (Xip xong chau Thai), Ai-lao, and Muong Phuan (modern Xiang Khuang in Laos). The result was greater stability.¹⁴³ Following this development, Đại Việt’s attention turned to its age-old foe, Champa. From 1370 to 1390 Đại Việt faced repeated depredations from Champa but offered no effective resistance.¹⁴⁴ After the naval victory in 1390, however, Đại Việt seems to have gotten the upper hand. In 1396 Đại Việt troops under the leadership of a general invaded Champa and captured a Cham general. From 1400 to 1403, Đại Việt invaded Champa every year, sometimes successfully. The invasion in 1402 was massive and the most effective in terrifying the Cham king, who agreed to cede territory to Đại Việt in exchange for peace. Thus the northern Cham territory of Amaravati fell into Vietnamese hands and was divided into four subprefectures (*châu*): Thang, Hoa, Tu, and Nghia. In 1403 Đại Việt mobilized two hundred thousand troops to invade Champa. Vijaya was besieged but did not fall, Đại Việt troops having withdrawn because of poor leadership and insufficient grain supplies. This unsuccessful invasion lasted nine months. Although the Ming court sent nine warships at Champa’s request, they seem to have encountered only the withdrawing Vietnamese navy at sea, and no fighting occurred.¹⁴⁵ In 1407 Champa,

taking advantage of Đại Việt's subjugation by the Ming, won a victory by regaining the four subprefectures previously lost to Đại Việt.¹⁴⁶

From the mid-1440s, according to Vietnamese sources, Đại Việt intensified its attacks on Champa because of the latter's repeated encroachments on its territory. In 1446 Đại Việt troops (allegedly over six hundred thousand) sacked the capital of Champa and took the Cham king and 33,500 captives to the Vietnamese capital.¹⁴⁷ But the Cham apparently remained strong since in 1470 the Cham king led over one hundred thousand Cham troops to invade Hóa Châu. Lê Thánh-tông decided to invade Champa again. The 100,000-strong Vietnamese naval expedition set out on November 28, 1470, followed by another 150,000 Vietnamese forces on December 8. Lê Thánh-tông also marched in person on the same day and composed a poem with the sentence: "The boom of the thunder-cannon shakes the earth," implying that the Đại Việt navy was heavily armed with firearms, as suggested by the preceding discussion. Fighting started on February 24, 1471, when five hundred Đại Việt warships and 30,000 troops were ordered to block the way of 5,000 Cham troops and elephants. Then one thousand warships and 70,000 troops followed under the leadership of Lê Thánh-tông.¹⁴⁸ On March 18, Thi-nai was taken and more than 400 Chams killed. On March 22 the Cham capital Cha-ban (Vijaya) collapsed after a four-day siege. According to the Vietnamese chronicle, more than 30,000 Chams were captured, including King Tra Toan and his family members, and over 40,000 killed. During the siege signal-guns were fired by the Đại Việt side. Although other forms of firearms must also have been employed, the sources are silent on this point.¹⁴⁹

According to the *Ming shilu*, the Annam (Đại Việt) troops arrived in Champa during the second month of the seventh year of Chenghua (February 20–March 21, 1471), sacked its capital and captured its king and over fifty family members, took the seal of the Cham king, set fire to and destroyed houses, and killed and captured "countless" military personnel and civilians.¹⁵⁰ The Malay annals, *Sejarah Melayu*, also record this war: "The Raja of Kuchi (Đại Việt) accordingly invaded Champa: and the men of Kuchi fought a fierce battle with the men of Champa. One day the Raja of Kuchi sent messengers to the Treasurer of Champa to win him over to his side. The Treasurer of Champa acquiesced (and undertook to) open the gate. Accordingly when day dawned he opened the gate and the men of Kuchi entered the city and

fought the men of Champa, some of whom resisted, while the others concerned themselves with saving their families. And Yak (Vijaya) fell and the Raja of Champa was killed."¹⁵¹

As a result Đại Việt annexed two Cham regions, Avaravati and Vijaya, or about four-fifths of Champa's total territory, a defeat from which Champa never recovered.¹⁵² The fate of Champa was thus sealed, and the balance of power that had lasted more than a millennium (ca. 192–1471) between Đại Việt and Champa was finally broken, partially because of the utilization of firearms by Đại Việt.¹⁵³

No evidence suggests that Champa ever acquired firearms. In 1410 Cham soldiers seem to have possessed no firearms.¹⁵⁴ A Chinese envoy who arrived in Champa in 1441 observed: "Its people [read: army] is very weak; [their] guards on the city walls in its country all hold [only] *bamboo spears*" (emphasis added).¹⁵⁵ The fact that the terms for weapons in a fifteenth-century Cham-Chinese dictionary all refer to conventional weapons (spear, lance, etc.) offers more support to the Chinese observation.¹⁵⁶ It is at least suggestive that an early-twentieth-century source states that Champa employed strong crossbows to fight against the Lý, the Trần, and the Lê dynasties.¹⁵⁷ More importantly, the fact that not a single firearm of Champa has been found (despite the numerous artifacts of Champa available today) supports the proposition that Champa, at least by the end of the fifteenth century, did not have access to firearms.¹⁵⁸

This contrasts sharply with the contemporary Vietnamese, who were actively procuring copper and iron from Yunnan to manufacture firearms. According to a Portuguese observation made in the 1590s, the people of Champa were "weak and with no courage, their weapons are of bad quality and they are clumsy in using them and very disorganized during the battle." The common weapons they used were still lances and crossbows. They did possess some pieces of artillery and nearly one thousand arquebuses, which were, however, "badly adjusted and with a very bad quality [gun]powder." In particular the people of Champa could not handle the weaponry themselves and had to hire mercenaries. Therefore, "it is foreign slaves who deploy them, for they themselves have little taste for that and they use them more to terrify than to have an effect" (emphasis added).¹⁵⁹ As such, it is clear that Champa lagged behind Đại Việt technologically from the 1390s. We also have reason to believe Lê Thánh-tông's claim in his war proclamation to the king of Champa

that Đại Việt possessed more troops and better weapons than Champa.¹⁶⁰

In early 1471, sensing the change in the balance of power in the region, Thai principalities such as Ai-lao sent tributes to the Vietnamese capital while Đại Việt troops were marching toward Champa, even before the fighting started. After Đại Việt crushed Champa, more of its western neighbors came to pay tribute, apparently feeling the shockwave of Đại Việt's unprecedented feat.¹⁶¹ In the fall of 1479 Đại Việt, with a force of 180,000 according to Vietnamese sources, launched more fierce invasions into Ai-lao, Muong Phuan, Lan Sang, and further west.¹⁶² Of these, Lan Sang was subdued easily.¹⁶³ Afterward, in 1480, Đại Việt troops went on to invade Nan, which was then under Lan Na, and then threaten Sipsong Panna, which, under great pressure, was reportedly going to submit to Đại Việt.¹⁶⁴ Finally, Đại Việt troops even reached as far as the Irrawaddy (Kim-sa or Jinsha) River in the Ava kingdom.¹⁶⁵

The details of Đại Việt's incursion into Ava are not available, but one can speculate that Đại Việt troops probably marched through the region around Keng Tung and reached the territory of Ava, because Keng Tung was later advised by the Ming court to be on alert.¹⁶⁶ In 1482 Mong Mit planned to borrow troops from Đại Việt to invade Hsenwi and Lan Na. The intrusion itself is confirmed by several Chinese and Vietnamese sources. According to the *Ming shi*, in 1488 Ava sent a mission to the Ming, complaining about Đại Việt's incursion into its territory. In the next year (1489) the Ming court sent envoys to admonish Đại Việt to stop.¹⁶⁷ Other sources, both Vietnamese and Chinese, state that Ming envoys were sent in 1488 to Đại Việt to announce the ascension to the throne of the new Ming emperor. The Chinese source also mentions Đại Việt's disturbance in the Burmese territory.¹⁶⁸

The Ming regime was very concerned with Đại Việt's expansionist activities. In July 1480 the Yunnan authorities, upon learning that Lan Sang had been attacked by Đại Việt, sent spies to reconnoiter the latter. The spies, who returned via Sipsong Panna by September 10 of the same year, reported that Đại Việt had taken more than twenty stockades from Lan Sang, killed over twenty thousand people, and attempted to invade Lan Na. They also said that Sipsong Panna had received a "false edict" from Đại Việt dated in 1479. As a result the Ming sent envoys to Đại Việt to reprimand it for its actions.¹⁶⁹ On

December 7, 1480, the Ming court learned that Đại Việt had already subdued Lan Sang and was drilling for the invasion of Lan Na. On July 5, 1481, the Ming, after having learned more about Đại Việt's invasions of Lan Sang, warned Đại Việt not to encroach on its neighbors on the strength of its armed forces and prosperity and ordered Sipsong Panna, Yuanjiang, Mubang (Hsenwi), Guangnan, Keng Tung, and other states to protect one another.¹⁷⁰ On June 30, 1482, Lan Na reported to the Ming that it had helped Lan Sang to repel the troops of Đại Việt and had destroyed the edict of Đại Việt.¹⁷¹ It was reported on January 8, 1484, that in 1483 Đại Việt, allegedly with 1,060,000 troops (a grossly exaggerated figure), had perhaps approached the territory of Sipsong Panna along four routes to demand that this state pay a tribute of gold and assist Đại Việt in invading Chiang Mai and Lan Sang. Đại Việt denied the accusation in a letter to the Yunnan authorities.¹⁷² On October 31, 1484, Lan Sang and Lan Na each reported to the Ming that Đại Việt had withdrawn its troops.¹⁷³ Thus Đại Việt's "long march" throughout mainland Southeast Asia, which had lasted about five years, came to an end.

Although the sources say little about the sorts of firearms used by the parties involved during Đại Việt's "long march," without doubt they employed the best firearms. As mentioned earlier, in 1479, when Đại Việt troops were on their way to invade Ai-lao, a firearm arsenal was burned down accidentally. The incident was recorded, probably because of the urgency of firearms for the campaign.¹⁷⁴ *The Chiang Mai Chronicle* records that "blunderbusses" were made and used by Lan Na to repel the Đại Việt forces. The original Thai Yuan word for "blunderbuss" is *puun yai*, or "big gun" whose muzzle was around ten centimeters.¹⁷⁵ Hence, this "blunderbuss" could have been a Chinese-style handgun or cannon.

Not only mainland but also maritime Southeast Asia felt the repercussions of Đại Việt's expansionist activities. In 1481 envoys from Melaka complained to the Ming that in 1469 Đại Việt had plundered its envoys to the Ming court when they were forced by strong wind to the shore of Đại Việt. "Annam had occupied the cities of Champa and wanted to annex Melaka's territory," but Melaka "dared not raise troops to engage war with them." The Ming emperor's edict admonished Đại Việt for these actions and informed the Melakan envoys: "If Annam is again aggressive or oppresses you, you should train soldiers and horses to defend against them."¹⁷⁶ The details of Đại Việt's

attempted invasion of Melaka cannot be substantiated, but it seems that Melaka may have been directly threatened in some way.¹⁷⁷ According to one Chinese source, Lê Thánh-tông led ninety thousand troops to invade Lan Sang but was chased by the troops of Melaka, who killed thirty thousand Vietnamese soldiers.¹⁷⁸ Although intriguing, this Đại Việt–Melaka connection is not supported by hard evidence. In 1485 Đại Việt included Melaka on the list of tributary countries together with Champa, Lang Sang, Ayudhya, and Java.¹⁷⁹

The immediate impact of Đại Việt's southward expansion and sack of the Cham capital, Vijaya, was the diaspora of the Cham to different places, such as Hainan, Cambodia, Thailand, Melaka, Aceh, and Java. For example, over one thousand Chams fled to Hainan with a Cham prince, who later became king of the remnant Champa under Ming patronage. According to the *Sejarah Melayu*, after Vijaya fell, "the children of the Raja of Champa together with the ministers scattered and fled in all directions. Two sons of the Raja, one of them named Indra Berma Shah and the other Shah Palembang, escaped by ship, Shah Palembang to Aceh and Shah Indra Berma to Malaka. . . . That was the origin of the Chams of Malaka, all of whom are sprung from Shah Indra Berma and his descendents." This exodus of the people of Champa resulted in the modern linguistic distribution of Chamic dialects.¹⁸⁰

Through the Cham emigration other countries or regions in maritime Southeast Asia may have felt the shock wave of Đại Việt's aggression and expansion. According to a Vietnamese source, Đại Việt during the late Hồng-đức reign (1470–97) also subdued Ryukyu (Liu-kiu).¹⁸¹ However, this is so far not supported by other sources. The records on the Ryukyu side, such as the *Rekidai hoan* (The Precious Records of the Consecutive Dynasties), are completely silent on Ryukyu–Đại Việt relations until 1509, when the king of Ryukyu sent a mission to Đại Việt.¹⁸² The so-called subjugation of Ryukyu may refer to the fight that occurred when a Ryukyuan ship was cast onto the Đại Việt shore in 1480.¹⁸³

Different countries and peoples perceived the expansion of Đại Việt differently. The Vietnamese were jubilant and content with Lê Thánh-tông's reign: "Thánh-tông . . . revitalized all the professions, set up *phu* and *ve*, fixed official ranks, promoted rite and music, chose clean and able officials, sent expeditions to the four directions, expanded the territories; Tra Toan was captured, Lao-quà (Lan Sang)

collapsed, Ryukyu was defeated, Cam Cong fled and died, the barbarians in the four directions surrendered, wind blew from the eight directions. [During his] thirty-eight-year rule, the country was peaceful and well governed. How spectacular was this!"¹⁸⁴

In the eyes of the Chinese, the Vietnamese were extremely troublesome: "In the seventeenth year of Chenghua (1481), Laowo (Lan Sang) [sent envoys to the Ming court] for emergency help. The Ministry of War memorialized: 'Annam annexed Champa on the east, took Laowo on the west, dilapidated Babai (Lan Na), issued a false edict to the Cheli (Sipsong Panna) Pacification Commission, killed the envoys of Melaka. [We] heard that its country will send three thousand warships to attack the Hainan [island].'"¹⁸⁵

However, for other Southeast Asians, such as the Chams, the Thai/Shan from the western frontier of Đại Việt to modern Burma, the Burmans of Ava, and even the Melakans (and perhaps the Ryukyans), Đại Việt of the second half of the fifteenth century was a formidable enemy and a great potential threat. This study suggests that the borrowed gunpowder technology contributed to the golden age of Đại Việt, a factor that may or may not have been acknowledged by the contemporaries of China and Southeast Asia.

The Legacy of Chinese-Style Firearms in Post-1497 Đại Việt

The Vietnamese continued to employ firearms after Lê Thánh-tông's reign. As Đại Việt's territory extended to the south, its military forces and technology followed. In 1471, immediately after the victory over Champa, one *ve* was set up in the conquered Cham land Quang-nam. In 1498 a "*chong* and crossbow" unit (*so*) was added, and two more *ve* were set up, each with a "*chong* and crossbow" unit.¹⁸⁶ From the early sixteenth century onward, handguns, signal guns, cannons, and rockets were regularly used, though mostly in the domestic fighting of Đại Việt rather than against external enemies. In 1508 King Lê Uy Mục's body was blown to pieces by a big cannon (*pao*).¹⁸⁷ In 1511 and 1522 signal guns (and probably other firearms) were fired by Đại Việt government troops in fighting against rebels.¹⁸⁸ After the usurpation of the Mạc in 1527, firearms, including signal guns, cannons, and handguns, were more frequently employed by both the Mạc and the Trịnh forces in 1530, 1555, 1557, 1578, 1589, 1591, 1592, and 1593.¹⁸⁹

Vietnamese records attest the effectiveness of these firearms. For instance, in 1555 almost all of the several tens of thousands of Mạc troops were killed. In 1578 the Trịnh soldiers “fired [their] *chong* together at them, [killing] countless Mạc soldiers.” In 1593 the troops under Nguyễn Hoàng, who was sent to Thuận-hoá as a military commander, came back with heavy firearms, including cannons, to fight the Mạc forces. As a result the fortification of the Mạc was broken, and about ten thousand Mạc soldiers were killed.¹⁹⁰ It is also noteworthy that in the decisive battle between the Mạc and the Trịnh in 1592 in Thăng-long, Mạc troops employed heavy firearms (*dachong baizi huoqi* in Chinese, literally meaning “big *chong* and hundred-son [bullet] firearms”); a description of the fighting scene notes that “the [sound] of handguns and cannons shook the sky,” showing the intensity of the use of firearms.¹⁹¹ In 1597, 1619, and 1623, big *chong* (presumably cannons) and *chong* were fired in suppressing rebellions or in connection with royal intrigues.¹⁹²

Especially from the fifteenth century onward, firearms became an increasingly significant part of the political life of the Đại Việt state and of individual Vietnamese people of different levels of society. First, the institutionalization of gunpowder technology is clearly indicated by the fact that, at least by the eighteenth century, skills in operating handguns and cannon were tested in the triennial military examination, and the examinees of the first three levels were rewarded with copper coins based on the accuracy of their shooting. Second, at some state ceremonies for worshipping firearms, after firearms were fired cannons carried by carriages and different kinds of firearms shooters paraded following a certain order. Eventually the firearms were sent back to the arsenals.¹⁹³ Third, the Đại Việt state had to regulate the manufacture, use, repair, and trade of firearms and gunpowder because of their penetration into the ordinary lives of people, especially soldiers and craftsmen. Đại Việt laws and statutes prohibited trading firearms with foreign countries, privately storing and manufacturing firearms, and stealing firearms from government arsenals. Violators of these laws and statutes were severely punished.¹⁹⁴ Fourth, gunpowder and firearms-manufacturing materials, including iron (cannon) balls, lead, saltpeter, and sulfur, were increasingly required by the Vietnamese state. Consequently the mining of these materials was intensified. For example, an edict issued in 1740

ordered ethnic minorities to turn in lead, saltpeter, and sulfur for ammunition in lieu of taxes and *corvée*.¹⁹⁵

From the first half of the seventeenth to the early nineteenth century—in the nearly half-century (1627–72) confrontation and war between the Trịnh and the Nguyễn, in the Tây Sơn rebellion and their war against the Qing troops in the late eighteenth century, and even in the Nguyễn's fight against the Tây Sơn—though the Vietnamese still retained the Chinese terminology (*chong* and *pao*) for most of their firearms, Chinese-style firearms yielded more and more to European ones and decreased in importance. Since they did not disappear completely, however, more research needs to be done to discern these developments. The use of Chinese-style rockets for both war and entertainment purposes continued and was even widespread.¹⁹⁶

European and Korean records shed much light on the unique mastery of firearms by the Vietnamese. Among the many countries and regions in Southeast Asia, modern Việt Nam (first the north and then the south) stood out for its impressive number and skillful use of firearms. Đại Việt, rather than Champa, Burma, Siam, or other countries, impressed Tomé Pires at the very beginning of the sixteenth century (prior to the arrival of European firearms in Đại Việt) with its large-scale production of firearms. He observed: “[H]e (the king of Cochin China) has countless musketeers, and small bombards. A very great deal of [gun]powder is used in his country, both in war and in all his feasts and amusements by day and night. All the lords and important people in his kingdom employ it like this. Powder is used everyday in rockets and all other pleasurable exercises.” He also reports that a great quantity of sulfur and saltpeter was imported from both China and the Solor islands beyond Java via Melaka: “The island of Solor . . . has a great deal of sulphur, and it is better known for this product than for any other. . . . There is so much of this sulphur that they take it as merchandise from Malacca to Cochin China, because it is the chief merchandise that goes there from Malacca.”¹⁹⁷ Pires clearly suggests that a sizeable amount of sulfur was imported into Việt Nam.

A personal observation by a Korean merchant provides unique insight into the matter. Cho Wan-byok (“Zhao Wanbi” in Chinese) was captured and taken to Japan during the Japanese invasion of Korea in 1597. Between 1603 and 1607 he sailed on merchant ships three times from Japan to the Hung-nguyên county in Nghệ-an. Among many

things in the northern realm during the early seventeenth century, the skillful use of firearms by the Vietnamese greatly impressed Cho Wan-byok: "[The Vietnamese] also liked to drill handguns (*chong*); even children were able to fire them."¹⁹⁸

In 1653 Alexander de Rhodes said that the weapons of the soldiers in Tonkin included muskets that "they handle[d] with great dexterity."¹⁹⁹ Samuel Baron wrote in 1683 that the Tonqueen (Tonkin) soldiers were "good marksmen, and in that . . . inferior to few, and surpassing most nations in dexterity of handling and quickness of firing their muskets."²⁰⁰ He also said Tonqueen possessed "guns and cannons of all sorts, as also calibres, some of them of their own fabric, but the greatest part bought of the Portuguese, Dutch, and English, and stored with other ammunition suitable to their occasions."²⁰¹ In 1688 William Dampier said that the king of Tonkin purchased cannons and had seventy thousand professional soldiers armed with handguns under him.²⁰² This purchase of foreign firearms by the Trịnh in the north is also confirmed by a Vietnamese source. In 1670 an edict was issued to ban this practice, probably conducted by private parties.²⁰³ In 1633 Cristoforo Borri observed: "The Cochinchinois being now become so expert in the managing of them [artillery], . . . they surpass our Europeans."²⁰⁴ By contrast, the Chams' aloof attitude toward firearms is perfectly illustrated in the source cited earlier. Modern historians have pointed out that other Southeast Asian peoples, including the Malays, the Javanese, the Achinese, the Siamese, and the Burmese, though they may have been familiar with firearms before 1511, never "developed their artillery into a very effective arm."²⁰⁵

These highly praised skills in firearms can only be explained by Đại Việt's profound knowledge and long experience with firearms ever since 1390. The point to be stressed here is that superior European military technology did not arrive in Đại Việt in a vacuum in the seventeenth century; rather it built on an earlier Sino-Vietnamese layer.²⁰⁶ It is also noteworthy that the Vietnamese, unlike the Burmese, had a tendency not to hire mercenaries, relying instead on their own native armies.²⁰⁷ The expertise of the Vietnamese in firearms may have rendered recruiting mercenaries unnecessary.

Several conclusions may be drawn from our discussion. First, this research has shown that Chinese firearms reached Đại Việt by 1390, over 120 years before 1511, when Melaka fell to the Portuguese. This

transfer of military technology was greatly furthered by Ming China's invasion and occupation of Đại Việt during 1406–27. The Ming troops, relying in part on their superior firearms, had conquered Đại Việt, a feat which other Chinese dynasties had envied but unsuccessfully attempted. Contrary to the Ming wish, however, the Vietnamese acquired its advanced military technology and numerous firearms during the later period of the Ming occupation, an acquisition ultimately contributing to the expulsion of Ming forces from Đại Việt.

Cultural exchange is a two-way process, and this was also true of the spread of gunpowder technology between China and Đại Việt. Though Đại Việt first acquired gunpowder technology from China, it later exported better techniques such as the wooden wad and possibly a new ignition device to China. On the one hand, it is thus time to rectify once and for all the misunderstanding of the *Ming shi*, or the belief that China learned to make firearms from Việt Nam. On the other hand, it is also time to recognize Việt Nam's contributions to Chinese gunpowder technology.

Second, to quote O'Connor, "States and peoples rise and fall for reasons."²⁰⁸ The fall of Vijaya in 1471 is a complex issue requiring an equally complex answer. A single explanation is too simplistic. Following Victor Lieberman's multivariable scheme explaining political, socioeconomic, and cultural changes during early modern Southeast Asia and other parts of Eurasia, I propose that gunpowder technology should be considered as one of the variables that caused the downfall of Champa and facilitated Đại Việt's "long march" as far as the Irrawaddy River in modern Burma.²⁰⁹

The second half of the fifteenth century witnessed Đại Việt's golden age, especially its external expansion. To the south Đại Việt subdued Champa in 1471 after more than one thousand years of confrontation, with Champa subsequently ceasing to be a viable competing power. Thus the political geography of the eastern part of mainland Southeast Asia dramatically changed. One may even claim that to some extent it was gunpowder technology that paved the way for the *nam tiến*, or Việt Nam's march to the south, and that it was thus responsible for the creation of a new kind of Vietnamese state (Cochin China) and identity, as delineated by Li Tana. To the west Đại Việt not only stabilized its border region with the different Tai peoples but also marched all the way to the Irrawaddy River in Burma in the late 1470s and early 1480s. As a result kingdoms in

northern mainland Southeast Asia, including Lan Sang, Chiang Mai, Sipsong Panna, and Burma, were terrified, and even Ming China was alarmed. Parts of maritime Southeast Asia such as Melaka felt the threat of Đại Việt as well.

Although many other factors contributed to these developments in fifteenth century northern mainland Southeast Asia, gunpowder technology was one of the most crucial. To paraphrase the epigraphs at the beginning of this essay, Đại Việt borrowed, digested, and internalized Chinese gunpowder technology and employed it to achieve its ends more easily than before, while Champa, for reasons still unclear to us, failed to grasp this technology and was penalized fatally. Lan Sang, Lan Na, and other Tai peoples, though obtaining gunpowder technology, incorporated it less effectively than Đại Việt in terms of quality and quantity.

Notes

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1. Sun Laichen, "Transfers of Military Technology from Ming China to Northern Mainland Southeast Asia."

2. *Ming shi*, 92:2264. See also 89:2176–77. Here and elsewhere in the essay the translations are mine unless otherwise noted.

3. Needham, *Science and Civilisation in China*, 311 (pointing out that both Chinese and Western scholars have followed this belief); Phan Huy Lê et al., *Một số trận quyết chiến lược trong lịch sử dân tộc*, 142 n 3.

4. Arima Seiho, *Kaho no kigen to sono denryu*, 166–71; Needham, *Science and Civilisation*, 311–12; Wang Zhaochun, *Zhongguo huoguo shi*, 106–7; Li Tana, *Nguyễn Cochinchina*, 43–44. See also Zheng Yongchang, *Zhengzhan yu qishou*, 39 n 65; Liu Zhenren, “Mingdai weisuo zhidu yanjiu,” 309. One participant at the conference on Việt Nam at UCLA, where this study was originally presented, informed me that she had been teaching the old view.

5. The time spans are based on 192–1471 or 939–1471, with 192 as the beginning date of Champa and 939 the start of Việt Nam independent of Chinese control.

6. For discussion of the divergent views on the *nam tiến* in modern Vietnamese historiography (1954–75), see Lockhart, “Competing Narratives of the *Nam tien*.”

7. For example, “the Vietnamese march southward at the expense of Champa was, to a large extent, a demographic pressure. The Vietnamese victory was above all a victory of number;” and “the fourteenth century . . . witnessed the demographic explosion in Vietnam that brought about the imbalance of forces that existed between the two kingdoms. . . . Champa . . . was defeated by sheer number.” See Quách-Langlet, “Geographical Setting of Ancient Champa,” and Lafont, “New Patterns on the Ethnic Composition of Champa,” 41–42, 69. See also Maspéro, *Champa Kingdom*, 112; Trần Trọng Kim, *Yuenan tongshi*, 10.

8. O’Connor, “Agricultural Change and Ethnic Succession in Southeast Asian States,” 986.

9. Li Tana, *Nguyễn Cochinchina*, 159–72.

10. Whitmore, “Transforming Dai Viet, Politics and Confucianism in the Fifteenth Century,” chap. 5; idem, “Two Great Campaigns of the Hong-Duc Era (1470–1497) in Dai Viet,” 3; Momoki Shiro, “Dai Viet and the South China Sea Trade,” 18–23.

11. Hall, *Maritime Trade and State Development in Early Southeast Asia*, 178–93; idem, “Economic History of Early Southeast Asia,” 1:252–60. The French colonial image of Champa as a mono-ethnic Cham and centralized state has been challenged in recent years. In addition to Hall’s works, see Hickey, *Sons of the Mountains*, 78–120; Taylor, “Early Kingdoms,” 153–57; Li Tana, *Nguyễn Cochinchina*, 31–33; Reid, “Chams in the Southeast Asian Maritime System,” 49–53. For a detailed overview of the debate on the nature of “Champa” in Vietnamese historiography, see Lockhart, “Colonial and Post-colonial Constructions of ‘Champa,’” 1.

12. Chen Chingho (Chen Jinghe), *Đại Việt sử ký toàn thư* (cited henceforth as *Toàn thư*), 1:464. *Kham dinh Viet su thong giam cuong muc* (cited henceforth as *Cuong muc*), 11:12a, says *huopao* (cannon), which was a nineteenth-century alteration. For consistency and simplicity, I use Chinese terminology for all the weapons that appear throughout this study. The Vietnamese borrowed

terms from the Chinese for all the firearms as well as other types of weapons. For example, *hoa tiên* for *huojian*, *phao* for *pao*, and *súng* for *chong*.

13. Trần Trọng Kim, *Yuenan tongshi*, 128; Li Tana, *Nguyễn Cochinchina*, 43. The word *chong* in the early Ming period could mean either "handgun" or "cannon." When it is not clear whether it refers to a handgun or a cannon, the original term is kept instead.

14. Momoki Shiro, "10–15 seiki Betonamu kokka no minami to nishi," 166.

15. Momoki Shiro, "Was Champa a Pure Maritime Polity?" 7; Whitmore, "Two Great Campaigns," 2.

16. Maspéro, *Champa Kingdom*, 64. See also 92–94, 107–9.

17. Defeating his rival Xiang Yu, Han Gaozu, or Liu Bang, founded the Former Han dynasty (206 BCE–25 CE).

18. *Toàn thư*, 462–64; Whitmore, *Vietnam, Ho Quy Ly, and the Ming*, 29–30; idem, "Two Great Campaigns," 2; Li Tana, *Nguyễn Cochinchina*, 21.

19. Lo Jung-pang, "Intervention in Vietnam," 159; Whitmore, *Vietnam*, 30–32; Momoki Shiro, "10–15," 166.

20. *Ming shilu youguan Yunnan lishi ziliao zhaichao*, 2:642.

21. *Toàn thư*, 471; Zheng Yongchang, *Zhengzhan*, 48; Whitmore, *Vietnam*, 43–44.

22. Li Wenfeng, *Yue qiao shu*, 2:17b.

23. *Ibid.*, 2:18b, 23a.

24. *Ming shilu*, 1:215, 228; Qiu Jun, *Pingding Jiaonan lu*, 47:1–12; *Toàn thư*, 1:495; Li Wenfeng, *Yue qiao shu*, 2:23a–b, 30a; 6:4b; 10:8a, 12a, 16a.

25. Regarding the estimated percentage, see Wang Zhaochun, *Zhongguo huoqi shi*, 103.

26. Cited in Needham, *Science and Civilisation*, 339.

27. All the dates were converted by following Hazelton, *Synchronic Chinese-Western Daily Calendar*. Regarding the military operation, see *Ming shilu*, 1:223, 225.

28. *Ming shilu*, 1:225; Li Wenfeng, *Yue qiao shu*, 10:4b–5a. Some figures for troops and war casualties in both Chinese and Vietnamese sources seem to have been exaggerated, but this cannot be verified. Wei Yuan challenged the figures of armies in Ming records. See his *Shengwu ji*, 2:492. For a battle between the Ming and the Shan in 1388, the actual number of troops is doubled in the *Ming shilu*. See Zhang Hong, "Nanyi shu," bk. 255, p. 199; *Ming shilu*, 1:98, 110–11, 130. On the Vietnamese side, at least on one occasion we know the figure is inflated due to scribal error (see note 148).

29. *Ming shilu*, 1:222; Li Wenfeng, *Yue qiao shu*, 2:22a.

30. Li Wenfeng, *Yue qiao shu*, 6:6b; 10:6b.

31. *Ibid.*, 6:7a; 10:7a.

32. *Ibid.*, 10:7b, 16a; *Ming shilu*, 1:228.

33. Li Wenfeng, *Yue qiao shu*, 10:15b.

34. In the accounts *xianren dong* are not identified.

35. *Toàn thư*, 1:490.

36. As early as 445, the Chinese armies had already employed the effigies of lions to rout the elephantry of Champa. See *Gudai Zhong Yue guanxi shi*

ziliao xuanbian, 1:94. Similarly, in 1592, during the Japanese invasion of Korea, the Japanese soldiers wore hats with a “ghost head and lion face” (*guitou shimian*) on them to scare Chinese horses, and the technique was very successful. See Zheng Liangsheng, *Mingdai Zhong Ri guanxi yanjiu*, 587.

37. Here *shenji chong* seems to refer to heavy cannon.

38. Whitmore, “Two Great Campaigns,” 8.

39. Li Wenfeng, *Yue qiao shu*, 6:7a; idem, 10:7b–8a, 16a; *Ming shilu*, 1:228.; Wang Shizhen, *Annan zhuan*, 48:14a.

40. *Toàn thư*, 1:490. See also Li Wenfeng, *Yue qiao shu*, 6:7a and 10:8b.

41. *Ming shi*, 321:8315.

42. *Ming shilu*, 1:228–29; *Toàn thư*, 1:490; Li, *Yue qiao shu*, 6:7b; 10:8a–b, 16a–b.

43. *Ming shilu*, 1:229. See also Li Wenfeng, *Yue qiao shu*, 10:9a.

44. *Ming shilu*, 1:230; Li Wenfeng, *Yue qiao shu*, 10:9b; *Toàn thư*, 1:493.

45. Li Wenfeng, *Yue qiao shu*, 10:17a.

46. *Toàn thư*, 1:493.

47. Li Wenfeng, *Yue qiao shu*, 10:10a.

48. One *li* = 0.5 kilometers = 500 meters.

49. *Annan zhiyuan*, 229.

50. *Ming shilu*, 1: 231–32; Li Wenfeng, *Yue qiao shu*, 10:10a–11a.

51. Li Wenfeng, *Yue qiao shu*, 10:11b; *Toàn thư*, 1:493–94.

52. Li Wenfeng, *Yue qiao shu*, 10:12a; *Annan zhiyuan*, 231.

53. Li Wenfeng, *Yue qiao shu*, 6:8b; *Toàn thư*, 1:494.

54. Huang Fu, *Huang Zhongxuanguong wenji*, 2:15.

55. *Ming shilu*, 1:277, 278, 295. Both Chinese and Vietnamese sources overwhelmingly attest Zhang Fu’s extraordinary military leadership, but only one Chinese record reveals the cruel side of this Ming general. According to Gu Yingtai (*Mingshi jishi benmo*, 22:249), during the first month of the eighth year of Yongle (February 4–March 5, 1410), Zheng Fu in the battle at Dong-trieu chau killed five thousand Vietnamese rebels and captured two thousand, who were “all buried alive [first and then dug out] and piled up for display in the [Vietnamese] capital.” The Yongle emperor, who had been bothered by Zhang Fu’s continuous cruelty in battles, recalled him. This account, however, is not corroborated by other sources.

56. *Ming shilu*, 1:280; *Ming shi*, 321:8317; Li Wenfeng, *Yue qiao shu*, 6:9b.

57. *Ming shilu*, 1:283–84; Yamamoto Tatsuro, *Annan shi kenkyu*, 435. The *Ming shi* (321:8317) describes the assault from the firearms of the Ming side as “cannon [balls] and arrows burst[ing] out.”

58. *Ming shilu*, 1:308–9;

59. *Ibid.*, 1:370–71.

60. *Ibid.*, 1:287.

61. *Ibid.*, 1:301.

62. Regarding the connection to the campaigns against the Mongols, see Wang Zhaochun, *Zhongguo huoguo shi*, 102.

63. Regarding the Yongle emperor’s boast, see *Ming shilu*, 1:236. A late Ming scholar commented that Ming Chengzu “stands out among the hun-

dred kings" (Zhang Jingxin, *Yu Jiao ji*, bk. 104, p. 487). For the Vietnamese chronicle, see *Toàn thư*, 2:835.

64. *Toàn thư*, 1:479, 484–87; *Ming shilu*, 1:226, 235; Li Wenfeng, *Yue qiao shu*, 6:6a; 10:6a; Lo Jung-pang, "Intervention in Vietnam," 171.

65. *Toàn thư*, 1:487, 489; Lê Thành Khôi, *Histoire du Viet Nam, des origines à 1858* (1987), 200–201; Gaspardone, "Le Quy-ly," 1:798; Zheng Yongchang, *Zhengzhan yu qishou*, 46, 49–50. For example, when facing the Mongol invasion in 1284, the Vietnamese king invited the elderly wise men from across the country to his court for advice; they unanimously said "fight": "Ten thousand people said the same word, which was just like coming from one mouth." While facing the Ming invasion in 1405 when King Hồ Hán Thương consulted officials in the capital, some said fight and some said peace. His brother Hồ Nguyên Trừng replied: "I am not afraid of fighting but afraid that people will not follow" (*Toàn thư*, 357, 487). Although Ming military superiority (including the Ming navy) has been partially acknowledged, the role of firearms has not been addressed. See Lo Jung-pang Lo, "Emergence of China as a Sea Power during the Late Song and Early Yüing Periods," 493; idem, "Decline of the Early Ming Navy," 150–51; Zheng Yongchang, *Zhengzhan yu qishou*, 38.

66. "Lam son thực lục," 1:8b–10a, 13a, 15a–16a; Yamamoto Tatsuro, *Annan shi kenkyu*, 622, 653, 657, 658, 671; "Thiên nam dư hạ tập," "poetry section," 102a; *Toàn thư*, 2:516, 519, 523, 525; Lê Quý Đôn, *Đại Việt thông sử*, 12b, 15b, 16a, 21a, 26b, 27b, 40b.

67. *Toàn thư*, 2:528–29; *Ming shilu*, 1:431; Phan Huy Lê et al., *Một số trận quyết*, 86–130.

68. *Ming shilu*, 1:431.

69. *Ibid.*, 1:420.

70. Regarding the casualties, see "Lam son thực lục," 2:6a; "Thiên nam," "poetry section," 109b; *Toàn thư*, 2:529; Phan Huy Lê et al., *Một số trận quyết*, 124–25; *Ming shi*, 154:4240.

71. *Toàn thư*, 2:529; *Cương mục*, 13:31b; Lê Thành Khôi, *Histoire du Viet Nam* (1987), 211. According to the latter, the bell and the urns were two of the four wonders in ancient Việt Nam.

72. *Ming shilu*, 1:431; *Toàn thư*, 2:529; Phan Huy Lê et al., *Một số trận quyết*, 89, 126–27.

73. *Lam-on*, in "Thiên nam," "poetry section," 111a; *Toàn thư*, 2:530.

74. Unidentified.

75. *Toàn thư*, 2:532–33; Lê Quý Đôn, *Đại Việt thông sử*, 30a; "Viêm bang niên biểu," 64a; "Đại Việt sử ký tục biên," 1:13b, states that Le Loi ordered an iron plant to be opened at Tan-phuc (modern Da-phuc county in the Bac-giang province) to make *Xiangyang pao*.

76. *Toàn thư*, 2:540.

77. *Ming shilu*, 1:228, 456, 465, 472; *Toàn thư*, 2:531.

78. "Thiên nam," "poetry section," 115b; *Ming shilu*, 1:469; Phan Huy Lê et al., *Một số trận quyết*, 141.

79. *Ming shilu*, 1:441, 469–70; *Toàn thư*, 2:541. Regarding *Lũgong che*, see Needham, *Science and Civilisation*, vol. 5, pt. 6, p. 439.

80. *Toàn thư*, 2:541.

81. “Lam sơn thực lục,” 2:10b. Also in “Thiên nam,” “poetry section,” 115b.

82. Phan Huy Lê et al., *Một số trận quyết*, 141, 143.

83. “Lam sơn thực lục tục biên,” 16b, 17b.

84. “Lam sơn thực lục,” 2:11a; “Thiên nam,” “poetry section,” 114a–15b, 116b–17a; *Toàn thư*, 2:541–43; *Ming shilu*, 1:434–35, 445, 447–48, 449–50; Phan Huy Lê et al., *Một số trận quyết*, 144–75. The “Lam sơn thực lục” puts the number of the Ming reinforcing troops at two hundred thousand.

85. *Toàn thư*, 2:543.

86. Wang Zhaochun, *Zhongguo huogü shi*, 104–5, 110.

87. *Ming shilu*, 1:438.

88. *Ibid.*, 1:453 (see also 456–57); “Lam sơn thực lục,” in “Thiên nam,” “poetry section,” 117b; *Toàn thư*, 2:545–46. The “Lam sơn thực lục” claims that over two hundred thousand Ming troops, old and new, returned to China.

89. More importantly, in one of his letters to Wang Tong, the Ming commander-in-chief, Lê Lợi, stated: “In the past, [we had] few weapons, now [our] warships line up like clouds, armors shine against the sun, firearms (*chong jian*) pile up, gunpowder is stored full. Comparing the past to the present, [the change] from weak to strong is apparent.” See Nguyễn Trãi, *Uc Trai tap*, E36a (CCLXXV), 551, “Tai du Vương Thông thư” [Another Letter to Wang Tong].

90. “Lam sơn thực lục,” 3:8a; *Toàn thư*, 2:549. Although no firearms are specified, they were doubtless included.

91. Gu Yingtai, *Mingshi jishi benmo*, 22:257; *Ming shi*, 321:8325; Ngô Thị Sĩ, “Đại Việt sử ký tiền biên,” 10:52b. See also Yan Congjian, *Shuyu Zhouzi lu*, 198.

92. *Ming shilu*, 1:453, 460, 469, 479, 489, 491; *Toàn thư*, 2:515, 550, 554, 555, 556, 562, 569, 602; *Ming shi*, 321:8325.

93. This section benefited from the following works: Li Bin, “Yongle chao he Annan de huogü jishu jiaoliu”; Arima Seiho, *Kaho*, 169; Needham, *Science and Civilisation*, 311–13.

94. Qiu Jun, *Daxue yanyi bu*, 122:11b–12a; Yan Congjian, *Shuyu Zhouzi lu*, 183, 243; Hui Lu, *Pingpi baijin fang*, 4:32b; Zhang Xiumin, “Mingdai Jiaozhi ren zai Zhongguo zhi gongxian,” 55–57.

95. Hui Lu, *Pingpi baijin fang*, 4:32b; Needham, *Science and Civilisation*, 240, 311–13, 488 n b; Qiu Jun, *Daxue yanyi bu*, 122:11b–12a.

96. Li Bin, “Yongle che ha Annan,” 151–54.

97. The Lamphun handgun (see note 174) also has this device, though it is missing.

98. *Toàn thư*, 1:493.

99. *Ibid.*

100. Regarding the fate of Hồ Quý Ly and Hồ Hán Thương, see *Ming shilu*, 1:247. Yan Congjian (*Shuyu Zhouzi lu*, 183) says that they were executed, but Gu Yingtai in the *Mingshi jishi benmo* (22:248) states that Hồ Quý Ly was

released from prison later and sent to Guangxi as a soldier. Accounts on the Vietnamese side also differ on this point. Two state that Quý Ly, Hàn Thường, and others were executed, while the third says that Quý Ly was released from prison and died a natural death after his son Nguyễn Trung became the Minister of Rites (*sic*) and petitioned on behalf of him. See Ngô Thị Sĩ, “Đại Việt sử ký tiền biên,” “Bản kỉ,” 8:24b.

101. Li Xu, *Jiean Laoren manbi*, 220. Other Vietnamese also participated in Yongle’s expeditions against the Mongols. It is noteworthy that in 1449 after the capture of the Yingzong emperor, when the Mongols were besieging Beijing, a Vietnamese officer trained and led elephants to rout the horses of the Mongols (*Ming shilu leizuan—Shewai shiliao juan*, 745; Zhang Xiumin, “Mingdai Jiaozhi ren zai,” 62; idem, “Mingdai Jiaozhi ren yiru neidi kao,” in Zhang Xiumin, *Zhong Yue*, 80). Meanwhile, at the highest level a Vietnamese eunuch named Xing An (1389–1459), a descendent of an aristocratic Vietnamese family, and others, including the minister of war Yu Qian, commanded the troops of the Capital Battalions (*jing ying bing*) defending Beijing. This was the beginning of eunuchs being in charge of the Capital Battalions. See Chan Hoklam (Chen Xuelin), “Mingdai Annan ji huanguan shishi kaoshu,” 209, 228, 230–31, 233–34.

102. Zhang Jue, *Jingshi wucheng fangxiang hutong ji*, 15, 18; Chen Zongfan, *Yandu congkao*, 322, 522.

103. Wang Hongxu, *Ming shigao* [Draft history of the Ming dynasty] (Tianjin: Tianjin Guji Chubanshe, 1998), cited in Li Bin, “Yongle chao he Annan,” 155; Li Xu, *Jiean Laoren manbi*, 219.

104. *Ming shi*, 89:2176–77; 92:2264; Li Wenfeng, *Yue qiao shu*, 2:32a; Zhang Xiumin, “Mingdai Jiaozhi ren zai,” 54–62; idem, “Mingdai Jiaozhi ren yiru,” 78; Wang Zhaochun, *Zhongguo huoqi shi*, 104–7; Li Bin, “Yongle chao he Annan,” 154–56; *Ming shilu*, 1:455; *Ming shilu leizuan—Shewai shiliao juan*, 757, 758.

105. Li Bin, “Yongle chao he Annan,” 156.

106. *Ibid.*, 152; Wang Ji, *Junjitang rixun shoujing*, 28; Cheng and Zhong, *Zhongguo gudai bingqi tuji*, 232–33.

107. *Ming shilu leizuan—Junshi shiliao juan*, 88–186; Wada Sei, *Ming dai Menggu shi lun ji*, 1:66, 68.

108. Wang Ao, *Zhenze jiwen*, 1:15a.

109. *Ming shilu*, “Xianzong,” vol. 168, quoted in Zhang Xiumin, “Mingdai Jiaozhi ren zai,” 57.

110. *Ming shilu leizuan—Junshi shiliao juan*, 1078. For a discussion of the Tumu incident, see Frederick W. Mote, “T’u-mu Incident of 1449,” 243–72.

111. See note 93.

112. Shen Defu, *Wangli yehuo bian*, 2:433. Many similar accounts of the Ming and Qing times discovered by this author will be discussed elsewhere. The original source must have been the one in the *Daixue yanyi bu* (122:1058), written by Qiu Jun in 1487: “Recently there are magical-mechanism firelances (*shenji huoqiang*) whose arrows are made of iron and are propelled with [gunpowder] fire. It can shoot more than one hundred paces. They are very fast

and wonderful, when the sound is heard the arrow reaches [its target]. During the reign of Yongle, Nanjiao (Đại Việt) was pacified, and the kind made by the Jiao people (Vietnamese) was especially wonderful. Eunuchs were ordered to manufacture [it] following the technique."

113. *Toàn thư*, 2:555. It is hard to know what kind of firearm *huotong* or *hoa dong* refers to here. Li Tana (*Nguyễn Cochinchina*, 41) contends it was a (wooden-barreled) cannon, while Nguyễn Ngọc Huy and Tạ Văn Tài, in *The Lê Code*, interpret it as "brass tube used as weapon to throw flame" (1:129; 3:134). It certainly could have been a handgun as well. If it was a flamer-thrower, it would have been like the ones in figure 10a–b. Indeed, this kind of flamethrower was still widely employed on Chinese (and Korean) warships during the late sixteenth century. See Qi Jiguang, *Jixiao xinshu*, 280–81.

114. *Toàn thư*, 2:599, 625.

115. *Ibid.*, 2:557.

116. Regarding the date, see *Toàn thư*, 2:718. Regarding the "governmental organization," see "Thiên nam," 26b, 86a, 87a–b, 88a. See also "Quốc triều quan chế điện lệ," vols. 2 and 4.

117. "Thiên nam," 32a–49b; "Quốc triều quan chế điện lệ," vol. 5; *Cuong muc*, 20:31b–35b; 34:31a–b; Yan Congjian, *Shuyi Zhouzi lu*, 239. At least two of the six Vietnamese handguns at the Vietnamese History Museum in Hà Nội carry inscriptions saying they belong to certain *ve* or *so*.

118. *Toàn thư*, 2:664.

119. *Ibid.*, 2:676.

120. *Tây nam biên tai lục*, 31a; *Toàn thư*, 2:710; "Thiên nam," "governmental organization," 17a, 73a; Nguyễn and Tạ, *Lê Code*, 2:161.

121. *Toàn thư*, 2:740.

122. *Ibid.*, 2:555.

123. *Ibid.*, 2:658.

124. "Thiên nam," "governmental organization," 86b–87a, 89a.

125. He Mengchun, *He Wenjian shuyi*, 8:26b–35b, especially 27a, 29b, 32a; Xie Zhaozhe, *Dian lue*, 3:22a; Bai Shouyi, "Mingdai kuangye de fazhan," 100, 104.

126. *Ming shilu*, 1:478.

127. He Mengchun, *He Wenjian shuyi*, 8:26b–35b.

128. *Ming shilu*, 2:802; Zhang Xuan, *Xiyuan wenjian lu*, 68:17b.

129. Zhang Xuan, *Xiyuan wenjian lu*, 68:17b.

130. *Ming shilu*, 2:819; He Mengchun, *He Wenjian shuyi*, 4:17a–b, 18a, 26b, 30a.

131. *Ming shilu*, 2:822; Ni Tui, *Dian Yun linian zhuan*, 7:33a; Liu Kun, *Nanzhong zashuo*, 18a.

132. Wu Xingnan, *Yunnan duiwai maoyi*, 62.

133. *Ming shilu*, 2:802.

134. *Toàn thư*, 2:749.

135. Liu Kun, *Nanzhong zashuo*, 18a.

136. *Toàn thư*, 2:685, 706–11; Đào Duy Anh, *Việt Nam Văn hóa Sử cương*, 253, 329–30.

137. Phan Huy Chú, "Lịch triều hiến chương loại chí," 1:143, 149.
138. Wyatt and Wichienkeo, *Chiang Mai Chronicle*, 80–81.
139. Whitmore, "Development of Le Government in Fifteenth-Century Vietnam," ix. See also Trần Trọng Kim, *Yuenan tongshi*, 173, 180.
140. Whitmore, "Development."
141. "Thiên nam," "governmental organization," 32a–49b; *Cương mục*, bk. 5, 2015–22.
142. Whitmore suggested to me that throughout the early Lê not a single domestic rebellion had occurred.
143. *Toàn thư*, 2:590, 604, 605, 607–8, 613, 616, 630, 631, 659, 661–62, 663; Gaspardone, "Annamites et Thai au xve siècle"; Whitmore, "Colliding Peoples," 8–12; Yamamoto Tatsuro, *Betonamu Chugoku kankeishi*, map.
144. *Toàn thư*, 403–4.
145. *Ibid.*, 1:471, 479–83; Whitmore, *Vietnam*, 72–76; Chen Chingho, *Historical Notes on Hoi-An (Faifo)*, 1–5.
146. *Ming shilu*, 1:244, 332.
147. *Toàn thư*, 2:611; *Ming shilu*, 2:709–10.
148. *Toàn thư* says seven hundred thousand, but *Tay nam* states seventy thousand. The former must be a scribal error.
149. The fighting lasted nearly a month, but the sketchy Vietnamese chronicle devotes only one page to it.
150. *Ming shilu*, 2:89. Yan Congjian (*Shuyu Zhouzi lu*, 256) states that the Vietnamese killed more than three hundred people. This does not seem correct.
151. *Sejarah Melayu*, 102. For the etymology of the word "Kuchi," see Li Tana and Reid, *Southern Vietnam under the Nguyễn*, 2–3.
152. *Tây nam*, 9b–22b; "Thiên nam," "Champa section," 28a; *Toàn thư*, 2:679–84; Whitmore, "Development," 207–15; Maspéro, *Champa Kingdom*, 118.
153. Although the Cham kingdom did not disappear completely, it stopped being a viable force competing with Đại Việt.
154. Yan Congjian, *Shuyu Zhouzi lu*, 250.
155. Quotation from Wang Ao, *Zhenze jiwen*, 1:26b. See also *Ming shilu*, 2:599; Yan Congjian, *Shuyu Zhouzi lu*, 253.
156. Blagden and Edwards, "Chinese Vocabulary of Cham Words and Phrases."
157. Hoàng Côn, "Chiêm Thành khảo," 1a.
158. I thank Trần Kỳ Phương, former curator of the Đà Nẵng Museum of Champa Sculpture, for informing me about the absence of firearms among Champa artifacts.
159. Gonçalves, "Relation des affaires du Campā"; Reid, *Southeast Asia in the Age of Commerce*, 2:226. The first quote is translated for me by Pholsena Vathana while the second one is from Reid. I thank Vathana Pholsena also for reading the French translation of Gonçalves.
160. "Thiên nam," "Champa section," 2b; Maspéro, *Champa Kingdom*, 117.
161. *Tay nam*, 20b–21b; *Toàn thư*, 2:683, 685.

162. Muong Phuan appears as “Bon man” in Vietnamese and “Meng Ban” in Chinese records (*Ming shilu*, 2:828).

163. *Tây nam*, 23a–33a; *Toàn thư*, 2:705–10; Stuart-Fox, *Lao Kingdom of Lan Xang*, 65–66.

164. Wyatt, *Nan Chronicle*, 57; Wyatt and Aroonrut, *Chiang Mai Chronicle*, 98–99; Cannsu Kamani Sankram, *Jan May rajavan*, pp. ka–gi; *Ming shilu*, 2:813, 818, 828.

165. *Tây nam*, 31a; *Toàn thư*, 2:710.

166. Keng Tung here and Mong Mit and Hsenwi later in the discussion were all independent (though under nominal Ming control) Shan principalities in modern northern Burma.

167. *Ming shi*, 315:8132.

168. Yan Congjian, *Shuyu zhouzi lu*, 201–2; *Toàn thư*, 2:733.

169. *Ming shilu*, 2:812–13; *Tây nam*, 33a–b; *Toàn thư*, 2:712–13.

170. *Ming shilu*, 2:814, 818. Both Yuanjiang and Guangnan were in south-eastern Yunnan.

171. *Ibid.*, 2:825.

172. Li Wenfeng, *Yue qiao shu*, 11:18a–b.

173. *Ming shilu*, 2:837.

174. The hard evidence for the employment of firearms by the Đại Việt troops is a Vietnamese handgun held in the Lamphun Museum in northern Thailand. Limited knowledge of Vietnamese firearms led this piece to be wrongly identified as a Chinese handgun (Samran Wangsapha, “Pu’n san samai boran thi lamphun”). Based on the Vietnamese-style inscription (which is clearly different from the Chinese ones) on the gun, plus the historical context of Vietnamese invasion of Nan, one can confidently assign a Vietnamese origin to the gun. Otherwise, it would be hard to explain how a (fifteenth-century) Vietnamese gun appeared in northern Thailand. This gun is probably the only artifact of the Vietnamese invasion. I thank Kennon Breazeale for bringing this article to my attention and Volker Grabowsky for translating it.

175. *The Chiang Mai Chronicle* says that an archer named Mun Thum knew how to make “three-fathom arrows and blunderbusses” (99), while the Burmese *Jan May rajavan*, which is a translation of *The Chiang Mai Chronicle*, records “big bows and big machines” (*le kri yantara cet kri*) (p. ga), no doubt from the Thai Yuan words. Aroonrut in a personal communication informed me of the original Thai Yuan word and the size of the muzzle.

176. *Ming shilu*, 2:820, 822; Wade, “Melaka in Ming Dynasty Texts,” 43. The translation is from Wade.

177. For example, Đại Việt may have used the harboring of a Cham prince by Melaka as a *casus belli* against Melaka, or Melaka’s complaint to the Ming court against Đại Việt was perhaps made on behalf of these Cham refugees (see the following discussion).

178. Mao Qiling, *Mansi hezhi*, 10:1b.

179. *Toàn thư*, 2:726; Momoki Shiro, “Dai Viet,” 21–22 and n 29.

180. Thurgood, *From Ancient Cham to Modern Dialects*, especially 22–23; *Ming shilu*, 2: 842; *Sejarah Melayu*, 102–3; al-Ahmadi, “Champa in Malay Literature,” 104; Marrison, “Chams of Malaka.”
181. *Toàn thư*, 2:762, 835.
182. Kobata Atsushi and Matsuda Mitsugu, *Ryukyuan Relations with Korea and South Sea Countries*, 183–86.
183. *Ibid.*, 119.
184. *Toàn thư*, 2:835.
185. Wan Sitong, “Ming shi,” “shibu, baishi lei,” 413:598. See also the *Ming shilu*, 2: 817–18, 820–23.
186. *Toàn thư*, 2:686; *Cương mục*, 24:31a–b.
187. *Toàn thư*, 2:789.
188. *Ibid.*, 2:801, 829.
189. *Ibid.*, 2:839, 853, 854, 877, 886–90, 893, 895.
190. *Ibid.*, 3:899; Quốc Sử Quán Triều Nguyễn, *Đại Nam thực lục*, 1:25.
191. Mao Yuanyi, *Wu bei zhi*, 6:5187–88.
192. *Toàn thư*, 2:911, 935.
193. “Lê triều hội điển,” vol. 3; Phan Huy Chú, “Lịch triều hiến chương loài chí,” 41:122–23, 126–27, 133–36.
194. “Quốc triều hình luật mục lục,” 1:16b–17a; 2:46a; “Lê triều hội điển,” vol. 3; Phan Huy Chú, “Lịch triều hiến chương loài chí,” 35:12; 40:85–88; *idem*, *Lịch triều hiến chương loài chí*, 13:138, 140, 142.
195. “Lê triều hội điển,” vol. 1; Phan Huy Chú, *Lịch triều hiến chương loài chí*, 13:118; 31:471–72; Nguyễn Ngọc Huy and Tạ Văn Tài, *Lê Code*, 2:83.
196. Pires, *Suma Oriental*, 1:115; *Toàn thư*, 3:1095.
197. Pires, *Suma Oriental*, 1:115, 203. “Solor” includes not only the Solor Islands but also the island of Flores in modern Indonesia.
198. Iwao Seiichi, “Annan koku tokou Chosenjin Cho Wan-byok ni tsuite,” 11.
199. Rhodes, *Rhodes of Viet Nam*, 57.
200. Baron, “Description of the Kingdom of Tonqueen,” 6:686.
201. *Ibid.*, 6:665.
202. Cited in Reid, *Southeast Asia in the Age of Commerce*, 2:226.
203. *Toàn thư*, 3:991.
204. Borri, *Cochin-China: Containing Many Admirable Rarities and Singularities of that Country*, chap. 7; Boxer, “Asian Potentates,” 166.
205. Boxer, “Asian Potentates,” 162, 165–66; Li Tana, *Nguyễn Cochinchina*, 44–45.
206. “Sino-Vietnamese” here means “Chinese” by origin and “Vietnamese” in application.
207. Reid, *Southeast Asia in the Age of Commerce*, 2:226; Frédéric Mantienne, “Le recours des états de la péninsule indochinoise,” 59.
208. O’Connor, “Agricultural Change,” 987.
209. Lieberman, “Local Integration and Eurasian Analogies” and “Transcending East-West Dichotomies.”